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ABSTRACT

The pamphlets included in this volume are technical reports prepared as outgrowths of the Student Information System of the Western Nevada Regional Education Center funded by a Title III grant under the Elementary and Secondary Education Act of 1965. These reports demonstrate the use of the stored data; methods of interpreting the printouts from the Student Information System; methods of handling test data for school placement purposes; and methods of approximating IQ's or standardized test scores when neither of these is available. Pamphlets included in this volume are School Expenditures and Student Performance in Nevada, Personnel Factors and Student Performance, Analysis of Experimental Curricula, Curriculum Factors and Student Success, Standardized Testing, Social Structure and Transportation Effects on School Performance, and Student Performance Indicators. (PS)

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END OF PROJECT REPORT

1968-1971

VOL. IV

TECHNICAL REPORTS (PART II)

WN-REC Staff

June 26, 1971

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WESTERN NEVADA REGIONAL EDUCATION CENTER

220 Main Street
P. O. Box 421
Lovelock, Nevada 89419

Tel. (702) 273-2631

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INTRODUCTION

The pamphlets included in this volume (and the previous one) are technical reports prepared by the WN-REC staff as outgrowths of the development of the Student Information System. The first technical report was the fifth grade pilot study which tested the feasibility of a data collection system and the suitability of certain information items. That report is included with the Student Information (SIS) System Book (Vol. II of this report). The remaining reports included in this volume and the previous one (Vol. III) demonstrate the use of the stored data. They appear more or less in chronological order. The reports for the most part deal with methods of interpreting the printouts from the Student Information System - each county is dealt with in order. Other reports describe methods of handling test data for school placement purposes, or methods of approximating IQ's or Standardized Test Scores when either of these are not available.

SCHOOL EXPENDITURES AND STUDENT PERFORMANCE IN NEVADA

April 30, 1971

Theodore G. Brough

WESTERN NEVADA REGIONAL EDUCATION CENTER

220 Main Street
P. O. Box 421
Lovelock, Nevada 89419

Tel. (702) 273-2631

INTRODUCTION

This analysis of school budgets in the State of Nevada, in which budget items are related to student performance, reveals some surprises. Gross expenditure categories or gross characteristics of counties and towns (assessed valuations, for example) are not good indicators of school quality as indicated by student performance. Perhaps more detailed budgets itemizing services to students would be much more useful for public analysis of on-going school systems.

DISCUSSION

Expenditures per pupil in various Budget Categories are often used as indicators of the excellence of schools or school systems.[1] Other variables that are often considered as having a bearing on school excellence are: assessed valuation per pupil, community wealth (assessed valuation per resident population) and retention rate of pupils (average demotion or retention rate per ADA for grades 1 through 12).[2]

As a result of the data gathering activities of the Western Nevada Regional Education Center, an opportunity was afforded for comparing the various expenditure categories, assessed valuations, and district retention rates for the eight rural counties with student performance at grade levels 3 and 8. If school or district average performance on Stanford Achievement Tests in the sub-categories: Paragraph Meaning and Arithmetic Computation is taken as a measure of school or district excellence, then correlations of the above mentioned fiscal and school variables with student performance should help to identify the most significant expenditure categories or school variables related to school excellence.

[1] Mort, Paul R., et al, Public School Finance (New York: McGraw-Hill, 1960), pp. 101-125.
Office of Professional Development and Welfare, Profiles of Excellence (Washington: NEA, 1966), pp. 17, 87-91.
Grieder, Calvin, et al, Public School Administration (New York: The Ronald Press, 1961), p. 414.

[2] Burkhead, Jesse, Input and Output in Large-City High Schools (Syracuse: Syracuse University Press, 1967), pp. 56-59, 72-74, 84.

An analysis of the relationship between fourteen financial and other school variables and overage student performance (Stanford Achievement subtests: Paragraph Meaning and Arithmetic Computation) was made for ten Nevada County School Districts and fourteen Nevada cities and towns. The Counties involved were the eight counties of Western Nevada served by WN-REC plus Washoe and Clark Counties. The cities involved were the county seats of each of these counties plus Sparks and Henderson. Average student performance for the ten counties and twelve cities was computed using various sources of data (See Appendix A: Sources of Data).

The financial and school variables used in the analysis are the following (all expressed on a per pupil basis, unless otherwise indicated):

Total Expenditure
Net Expenditure
(Total less Transportation, Capitol Outlay and Debt Service
Instruction
Operation of Plant
Maintenance
Transportation
Maintenance Personnel/1000 ADA
Clerical Personnel/1000ADA
Administrative Personnel/1000 ADA
Assessed Valuation/ADA
Wealth (Assessed Valuation/Population)
Average ADA
Average Teacher's Salary
Average Retention/1000 ADA

See the Section: Sources of Data for the origin of this data, plus Appendix B for the data used.

Pearson Product Moment Correlations were computed between each of these fourteen independent variables and the four student performance variables mentioned. The results of these computations are shown in Table 1.

Table 1

CORRELATIONS BETWEEN VARIABLES

Independent Variable	Performance Measure:[1] PA 3	AR 3	PA 8	AR 8
Total Exp.	-.45*	-.14	-.22	-.17
Net Exp.	-.18	.03	-.55*	-.61*
+Instruction	-.27	-.06	-.49*	-.57*
Operation	-.27	-.05	-.61*	-.48*
+Maintenance	.31**	.38**	-.59*	-.58*
+Transportation	-.15	.25	-.02	-.23
Maint. Personnel	-.06	-.08	-.015	.04
+Cler. Personnel	-.36**	-.22	-.40**	-.54*
+Admin. Personnel	-.15	.13	.40**	.08
Ass. Val./Pupil	-.11	.12	-.58*	-.44**
Comm. Wealth	-.25	-.22	-.16	-.34**
+Average ADA	-.31**	-.59*	-.06	.31**
+Teacher's Sal.	-.20	-.56*	.23	.39**
+Retention Rate	-.17	-.002	.47*	.38**

[1] PA 3 = Paragraph Meaning, 3rd grade performance, Stanford
AR 3 = Arithmetic Computation, 3rd grade performance, Stanford
PA 8 = Paragraph Meaning, 8th grade performance, Stanford
AR 8 = Arithmetic Computation, 8th grade performance, Stanford

+ Used in final regression equations (see Table 2).

* Sign. at $p < .05$
** Sign. at $p < .10$

Table 1 shows that most of the independent variables are negatively correlated with student performance. What does one make of a negative (and sometimes significant) correlation between total per pupil expenditure or net per pupil expenditure and student performance? The negative significant correlations between expenditure per student in the operation category at the junior high school level may reflect the age of the buildings involved, especially since the maintenance category is also similarly correlated with performance at the eighth grade level.

The number of clerical personnel correlates negatively with student performance in all categories tested, usually significantly. The number of administrative personnel is usually positively correlated with school performance, significantly so for performance in 8th grade paragraph meaning. The Salary of Teachers is negatively correlated with school performance at the 3rd grade level but positively correlated with 8th grade performance. This may reflect the effect of departmentalization and increased expertise among junior high school teachers as opposed to primary school teachers. The near zero correlation (though negative) between school retention rate and 3rd grade performance may indicate that early retention does no harm to students in 3rd grade performance. The positive (significant) correlation between retention rate and school performance at the 8th grade level adds additional support for use of a high standard of performance. Evidently a tougher retention policy in the early grades results in better overall performance in the 8th grade. However, it may very well increase the drop-out rate. This needs further investigation.

The size of the district is negatively correlated with school performance at the 3rd grade level and positively (or close to zero) correlated with performance at the 8th grade. What does this indicate? Perhaps a larger school district can offer more resources and alternatives to 8th grade students, but these alternatives do not effect children in the 3rd grade, or perhaps the primary schools are too large in the large ADA districts.

Varying expenditures per pupil for transportation do not seem to have an adverse effect on student performance, all of the correlations being close to zero. However, the wealth of the community as measured either as assessed valuation per pupil or assessed valuation per resident, is negatively correlated with student performance. At the 3rd grade level these correlations are close to zero (one is positive) but at the 8th grade level there are significant negative correlations (all but one). What does this mean? Is it the availability of resources that make for good school performance or the wise use of them? Perhaps districts with the lowest resources are using them most efficiently out of necessity, while the more affluent are not so careful.

These observations concerning the individual factors and student performance do not tell the whole story. Perhaps many of these factors work together to make for a simpler pattern. The six variables: Total Expenditure, Net Expenditure, Operation, Maintenance Personnel (virtually zero correlation, hence no effect), Assessed Valuation/pupil and Community Wealth have negative correlations with 3rd and 8th grade performances, when one would expect them to be positive. Since these results are not clearly explainable, these variables will be removed before further

analysis is done. Their reverse trends may well mask the effects of the remaining variables if they are included in a multi-variate analysis.

REGRESSION EQUATIONS

The eight remaining variables were used in a multi-variate analysis (multiple linear regressions) to investigate the interactions of these variables. The purpose of these multiple linear regressions is to reduce the measured variables to a smaller number of variables for ease of predicting student performance. The equations resulting from the multi-linear regression analysis afford prediction of student performance utilizing significantly contributing terms. In this case, the resulting equations are only moderately successful, accounting for 46 to 69% of the variability of the student performance. The terms used in the final multiple linear regression equations, the contribution (percentage of variance contributed) of each term in the equation, and the value of the linear (Beta) coefficients for each contributing term are shown in Table 2. The final equations are listed below the table. The circled terms in the equations contribute two percent or less of the observed variability, and hence could be dropped with little loss in accuracy.

The Regression Equations are of two general types: For 3rd grade performance, maintenance enters as a positive contribution while clerical assistance enters as a negative. The contribution of ADA is either close to zero or negative (for arithmetic performance). Teachers salary enters as a positive contribution as far as paragraph meaning performance is concerned but as a negative when one considers arithmetic performance. This may reflect the teacher's getting increased salaries as a result of

Table 2

REGRESSION EQUATIONS

Multiple - Linear Regression - Beta weights for variables in the equations, percent of additional variability accounted for by the variable as it enters the equation and the final equations.

	PA 3		AR 3		PA 8		AR 8	
	Beta	% Var*	Beta	% Var*	Beta	% Var*	Beta	% Var*
Instruction	-.32	(2.0)			-.65	9.3	-.24	10.0
Maintenance	.62	32.2	.38	8.9	-.37	35.2	-.32	34.1
Transportation			-.18	(1.5)				
Cler. Personnel	-.52	13.0	-.63	13.9	.25	(1.8)	.10	(0.3)
Average ADA	.10	(0.3)	-.22	35.3				
Teacher's Sal.	.38	4.2	-.58	9.2			.09	(0.4)
Retention Rate					-.14	(0.7)	.15	(1.0)
Admin.					.52	10.9		
Constant	124.2		183.8		79.8		75.5	

* Additional variance in the dependent variable accounted for by inclusion in the regression equation.

Regression Equations:

PA 3 = 124.2 (-.32I) +.62M -.52C (+.10ADA) +.38T

AR 3 = 183.8 +.38M -.63C -.22ADA -.58T

PA 8 = 79.8 -.65I -.37M (+.25C) +.52ADM

AR 8 = 75.5 -.24I -.32M (+.10C) (+.09T)

(These equations account for 52, 69, 58 and 46 percent, respectively, of the total variance among the students' performance).

The circled terms in the table and in the equations contribute two percent or less of the observed variability among the performance measures (Stanford Achievement test scores).

increased training (and competency) in language related subjects but not getting such training in mathematics.

For 8th grade performance, maintenance enters as a negative contributor while clerical assistance enters as a positive. Perhaps clerical assistance more directly affects junior high school students than it does primary students. The clerical assistance factor, however, is a minor contributor to the final equation and could be dropped. Teachers salary is also a minor (or non-) contributor to 8th grade performance, while the budget item Instruction contributes negatively to student performance (contributes about 10% of the observed variability). About this same amount of variability is contributed to variation in arithmetic performance by variations in administrative support.

CONCLUSION:

In general, this analysis shows that variations in student performance at the 3rd and 8th grade level are related to the Maintenance, Clerical support and Instruction budget factors with smaller contributions attributable to Teacher's Salaries and Number of Administrators. Retention Rate and Transportation costs do not contribute very seriously to the prediction of student performance.

The remaining budget items considered in this paper may well contribute to the predictability of performance, but probably in a negative (or an unexpected manner).

This study suffers from weaknesses in the selected student performance data in the urban areas, as well as from the largely arbitrary nature

of the budget items as defined. What part, for example, of maintenance or clerical help directly affects elementary or junior high school students? How are Instructional funds administered so as to have the largest impact on students? How is the available wealth of the community administered? Is a poor district more efficient than a rich one? This investigator would suggest that this study be repeated with careful attention to further sub-division of the budget categories as well as more carefully defining the sample of student performances used for each county and for each resident area involved.

APPENDIX A

SOURCES OF DATA

Student performance data consisted of the average performance of the students on the Stanford Achievement sub-tests: Paragraph Meaning and Arithmetic Computation at the third and eighth grade level. County-wide and in-town only averages for the eight rural counties and for the eight rural county seats were computed from the results of the WN-REC region-wide testing program of Spring 1970. The county-wide and in-town average performances for the students in Clark County were extracted from the Clark County Publication: Fourth Grade Achievement Test Analysis and Profiles, October 1967[3]. Even though the Clark County Testing program used California Achievement Test instead of Stanford, the sub-tests: Reading Comprehension and Arithmetic Fundamentals, expressed as National Percentiles, were used as being comparable to the Stanford Achievement Sub-tests used for other districts. The 4th grade and 6th grade data was used as comparable to the 3rd and 8th grade data for other districts.

For Washoe County, Student Performance at the 4th and 7th grade level was taken from the Publication: Education in Nevada, An Assessment (1969)[4]. These student performances (as percentiles) were taken as comparable to the 3rd and 8th grade performances for the eight rural counties. In the absence of further information, these scores were taken as the average performance at these grade levels for students in Reno and in Sparks.

[3] Lawrence, Clifford and Walter D. Jenkins, Fourth and Sixth Grade Achievement Test Analysis and Profiles, October, 1967 (Las Vegas: Clark County School District, March, 1968),pp. 1, 2, 4, 5, 22.

[4] Davis, J. Clark, Education in Nevada: An Assessment (Reno: Research and Educational Planning Center, May 1, 1969), pp. 65, 67.

The fiscal and School Variables used in the analysis were obtained from Tables 31, 35, 11, 9 and 2 of the publication: Interim Report of Selected Data, 1969[5]. The Final, 1970 census figures for the counties and cities of Nevada were taken from the data published in the Reno Gazette, November 27, 1970. The city and county assessed valuations were taken from Nevada Community Profiles[6,7].

[5] Larsen, Burnell, Interim Report of Selected Data by the Superintendent of Public Instruction (Carson City: Superintendent of Public Instruction, 1969).

[6] Nevada Community Profiles, Western Nevada (Carson City: Department of Economic Development, May, 1970).

[7] Nevada Community Profiles, Southern Nevada (Carson City: Department of Economic Development, May, 1970).

APPENDIX B

BUDGET DATA USED IN THE ANALYSIS (For Source of Data See Appendix A).

Community	Total/ Student	Net/ Student	Instr./ Student	Oper./ Student	Maint/ Student	Trans./ Student	Maint./ 1000ADA	Cler./ 1000ADA	Admin./ 1000ADA
D	783	622	482	48	20	16	56	197	565
E	863	667	498	55	27	50	121	125	768
H	1168	708	521	77	22	38	000	69	830
B	1039	730	522	83	31	51	352	450	645
G	889	715	547	63	24	48	149	149	695
C	740	687	505	59	40	30	280	196	617
F	1039	944	631	111	43	33	000	532	532
J	896	656	518	55	19	15	127	215	546
I	871	650	495	70	20	19	60	114	624
A	1077	904	632	87	28	46	000	723	804
J 2	896	656	518	55	19	15	127	215	546
J 1	896	656	518	55	19	15	127	215	546
I 2	871	650	495	70	20	19	60	114	624
I 1	871	650	495	70	20	19	60	114	624
D 1	783	622	482	48	20	16	56	197	565
E 1	863	667	498	55	27	50	121	125	768
H 1	1168	708	521	77	22	38	000	69	830
B 1	1039	730	522	83	31	51	352	450	645
G 1	889	715	547	63	24	48	149	149	695
C 1	740	687	505	59	40	30	280	196	617
F 1	1039	944	631	111	43	33	000	532	532
A 1	1077	904	632	87	28	46	000	723	804

APPENDIX B CONT.

BUDGET DATA USED IN THE ANALYSIS (For Source of Data See Appendix A).

Community	Ass.Val/ ADA	Ass.Val/ Pop.	ADA	AR3	PA3	PA8	AR8	Teach. Sal(100s)	Ret. Rate*
D	69	1880	3543	34	54	66	80	76	181
E	105	2760	2477	56	48	63	80	75	212
H	379	9430	1447	40	53	52	70	76	495
B	202	5290	1554	32	40	42	50	76	373
G	224	6350	2014	34	50	52	64	75	262
C	63	1590	1783	34	46	66	76	83	231
F	636	6950	94	8	21	61	75	69	000
J	136	3440	61423	48	48	52	52	86	147
I	175	3990	24206	43	40	50	34	82	241
A	322	7990	622	34	48	50	40	76	162
J 2	136	1435	61423	38	36	45	43	86	147
J 1	136	3140	61423	48	48	52	50	86	147
I 2	175	2500	24206	43	40	50	34	82	241
I 1	175	3700	24206	43	40	50	34	82	241
D 1	69	1875	3543	52	55	66	73	76	181
E 1	105	2230	2477	30	49	65	80	75	212
H 1	379	1600	1477	52	48	61	74	76	495
B 1	202	2570	1554	46	47	46	58	76	373
G 1	224	1793	2014	46	50	52	70	75	262
C 1	63	890	1783	36	45	67	68	83	231
F 1	636	2640	94	38	38	61	75	69	000
A 1	322	1750	622	28	49	37	61	76	162

* Students per 100,000 enrolled.

PERSONNEL FACTORS

AND

STUDENT PERFORMANCE

May 17, 1971

Theodore G. Brough

WESTERN NEVADA REGIONAL EDUCATION CENTER

220 Main Street
P. O. Box 421
Lovelock, Nevada 89419

Tel. (702) 273-2631

The State Department of Education, Carson City, annually produces a computer printout of certified teachers. This consists of two parts. The first is a list of teachers listed in order of their Social Security Numbers.[1] This list includes the various types of information required in an application for certification. Much of it is coded, but the coding is explained in Memoranda issued from time to time by the Division of Finance and Retirement of the State Department of Education. The second part of the computer printout is a listing of certified teachers,[2] alphabetically listed by county. This includes a coded description of the teachers assignment along with the contracted salary.

One of the proposed studies of the Western Nevada Regional Education Center was to select data from the State Department's "Certification Information Program" data bank for the teachers identified as teaching a particular group of students. The student's performance would then be used as a performance measure and interactions between teacher's characteristics and student performance would be sought.[3] This document is a report on that study.

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[1] Department of Education: Total Teachers, October 17, 1969, 170 pp.

[2] Department of Education: Certified Teachers, December 23, 1970, 136 pp.

[3] Application to Continue the Western Nevada Regional Education Center (Lovelock: April 1970, p. 76)

GRADES ACHIEVED vs. TEACHER CHARACTERISTICS

In the Pilot Project performed for the purpose of identifying suitable student information, performance data (school grades) were gathered on 8 groups (one in each county of the WN-REC region) of fifth grade students. Also, the teachers of these 8 groups were identified.[4] These 8 groups of students and their teachers were used as the data base. Five students were randomly chosen from each group and their average overall performance expressed as a grade point average (on a 5-point scale) was computed. Certain professional characteristics of the teachers of these 8 groups of students were selected from the State Department of Education's Total Teachers List.[5] These characteristics were recoded and listed as shown in Table 1. The teacher's salary was obtained from the State Department of Education's Certified Teachers' List.[6]

The coding of the chosen data was such that increase in the scale reflects increasing training, experience or competence. As far as the teacher's major is concerned, the scale is in order of this investigators personal judgment as to the amount of specialization required for the major. On this scale, Social Studies is the "softest" major and Math, Science and other are the "hardest".

Pearson Product-Moment Correlations between each of the teacher variables listed in Table 2, and the Student Performance Measure were computed. The results are shown in Table 2. All correlations are low, only two of them:

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[4] Pilot Project: Fifth Grade Study, by Dale E. Dunn, T. G. Brough, V. M. Hyden, Jr., and S. C. Traegde (Lovelock, Nevada: Western Nevada Regional Education Center, February 1, 1970).

[5] Department of Education: Total Teachers, October 17, 1969, 170 pp. (Degree level was added from district information).

[6] Department of Education: Certified Teachers, December 23, 1970, 136 pp.

Table 1

STUDENT PERFORMANCE vs. TEACHER CHARACTERISTICS

Selected 5th Grade Students

		Teacher Characteristics					
County	Student GPA*	Experience**	Degree***	Major+	Age	Sex	Salary++
E	4.66	2	1	2	30	F	9
H	3.92	1	1	3	25	F	7
B	4.88	2	4	3	34	M	8
G	3.94	6	1	1	60	F	9
C	3.76	5	2	3	55	F	8
D	3.68	1	2	4	32	M	11
F	4.26	5	2	3	56	F	9
A	3.30	6	1	2	65	F	9

* Average performance of 5 students selected randomly from fifth grade students in each county. (Performance data normed as in Fifth Grade Study: Pilot Project - Fifth Grade Student Data, by Dale E. Dunn, et.al, Western Nevada Regional Education Center, Feb. 1, 1970).

** In 5-year intervals.

*** 1 = No Degree; 2 = AB; 3= AB+; 4 = MA.

\+ 1 = Social Sciences; 2 = Education; 3 = English, Art, Music; 4 = Math, Science, other.

++ Salary in Thousands.

Table 2

Correlation of Student Performance with teacher variables.

Variable	Correlation	Sign. Level
Experience	-.432	< .20
Degree	.471	< .20
Major	.356	--
Age	-.105	--
Salary	-.239	--

experience and degree level approaching significance. It is interesting to note that experience, age and salary are negatively correlated with student performance. It is not liberalism or conservatism in grading practices that determine these correlations (that is, perhaps older, more experienced, higher paid teachers grade more strictly than their younger colleagues) since the grades given for each of these groups of students have been normalized to the same average, overall performance for each classroom group.[7]

To further investigate the effects of each teacher variable on student performance, graphs of each teacher variable vs. student performance were made. These follow as Figure 1 through 5.

Figure 1 shows a peak in students performance vs. teacher's experience at 5 to 10 years experience followed by a drop with increasing experience. Similar peaks (and falling off) at about the same position are revealed in Figures 4 and 5 (teacher's age and teacher's salary). Figures 2 and 3 reveal an increase in student performance with increasing teacher education and the "hardness" of the teacher's major. However, for the teacher with a major in mathematics or science, performance falls off severely. Apparantly, for these fifth grade students at least, the pupil interactions with a teacher trained in the tightest discipline are not conducive to learning. The teachers getting the best performance from their pupils are those trained in the humanities: English, Art and Music. There is, however, a wide range of performance for all kinds of teachers. Since this is such a small sample of teachers (8) no great faith can be put in these results. The general trends obtained are of interest, however.

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[7] See Pilot Project Fifth Grade Study, by Dale E. Dunn, et. al; pp. 5-12, 5-13.

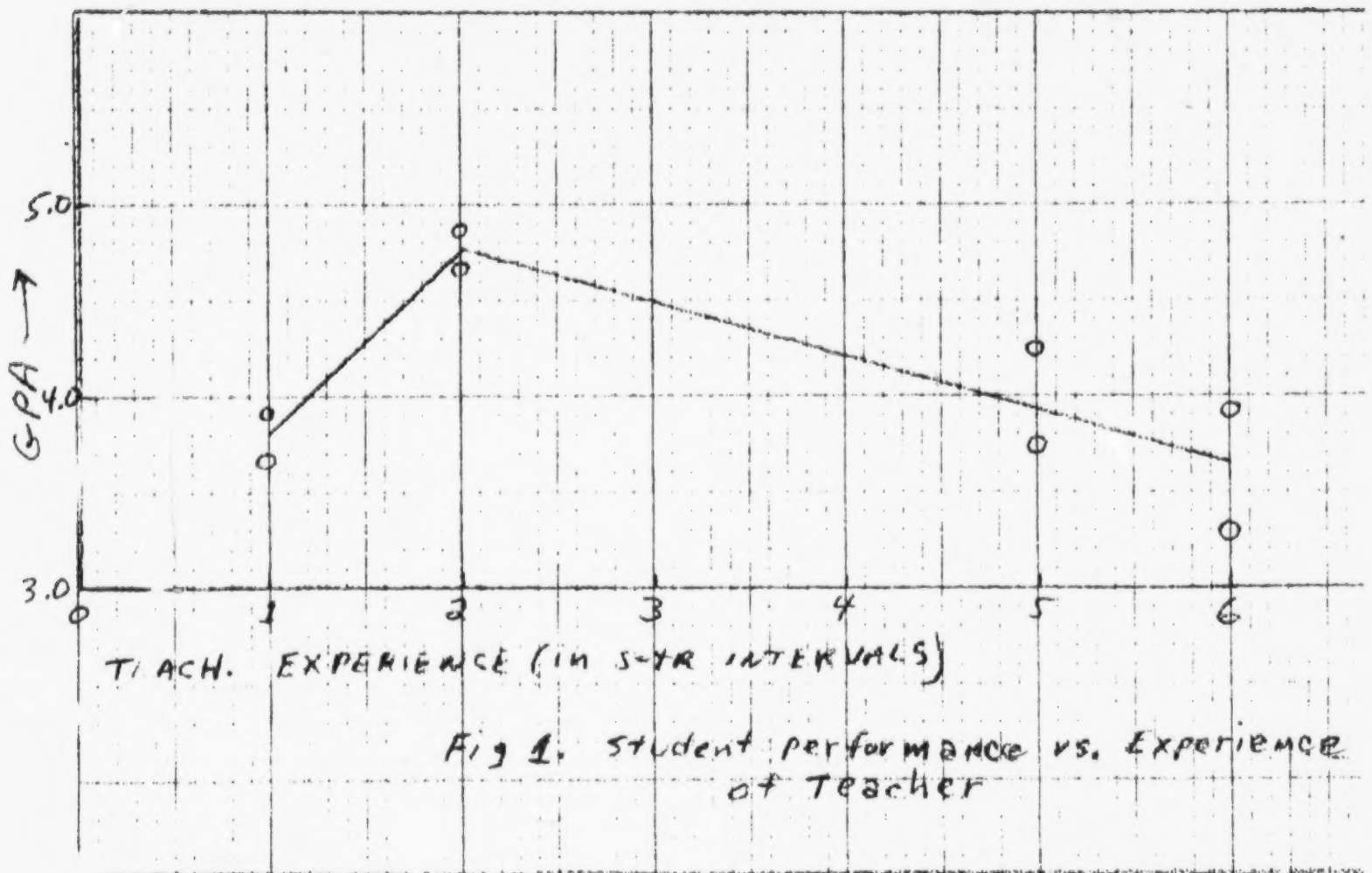

Fig 1. Student performance vs. Experience of Teacher

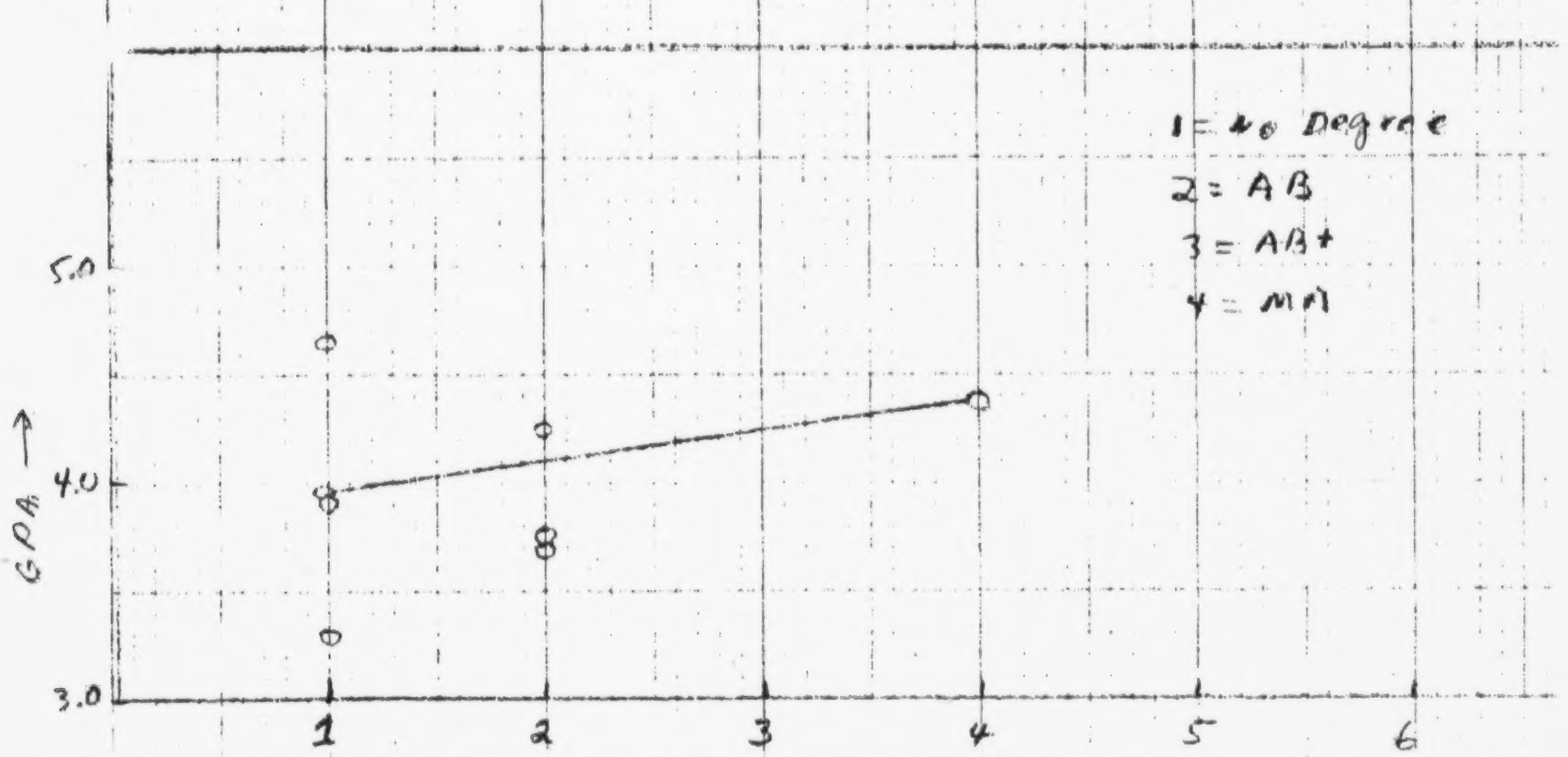

Fig 2. Student Performance vs. Education of Teacher

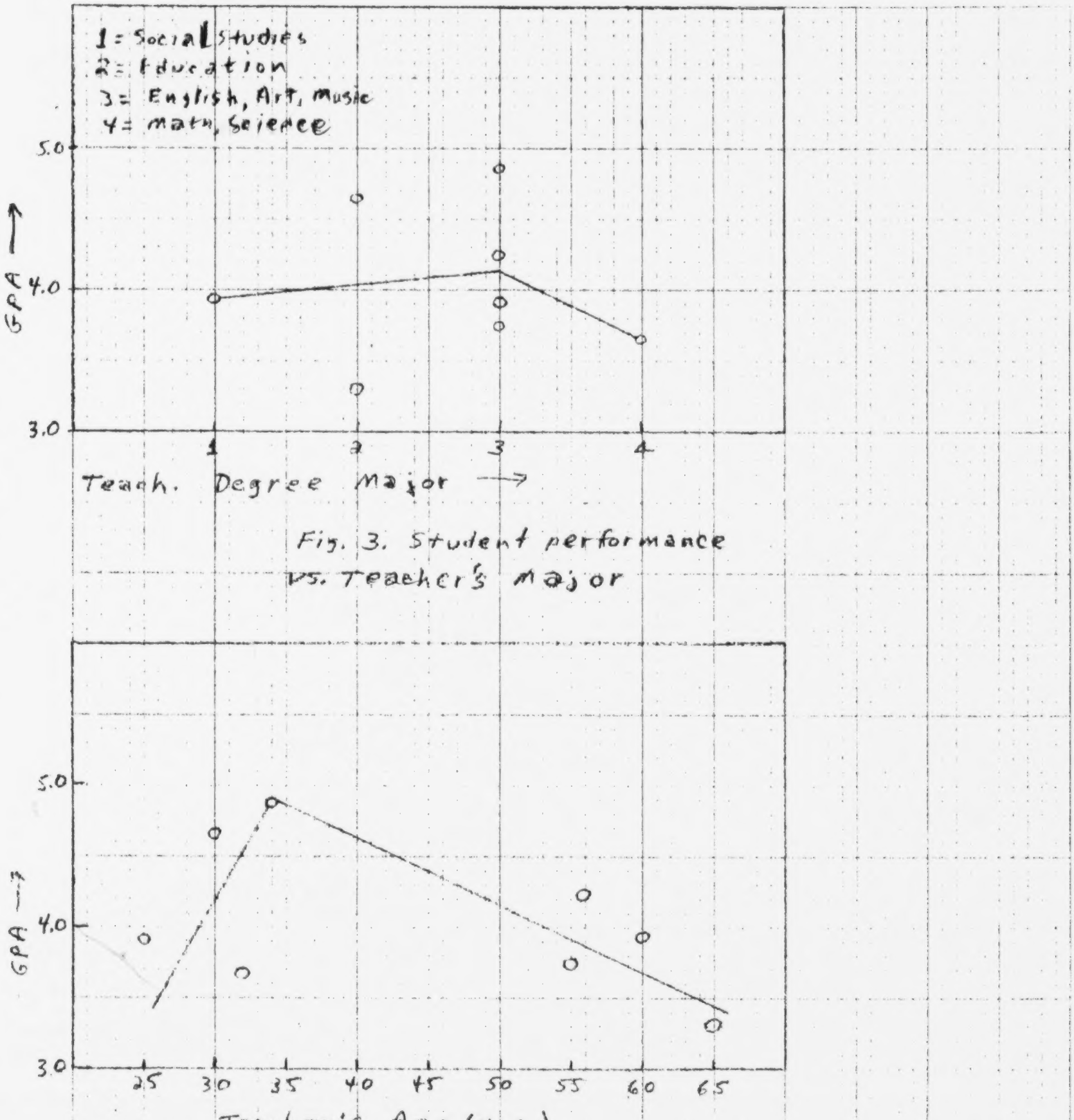

Fig. 3. Student performance vs. Teacher's Major

Fig 4. Student performance vs. Teacher Age

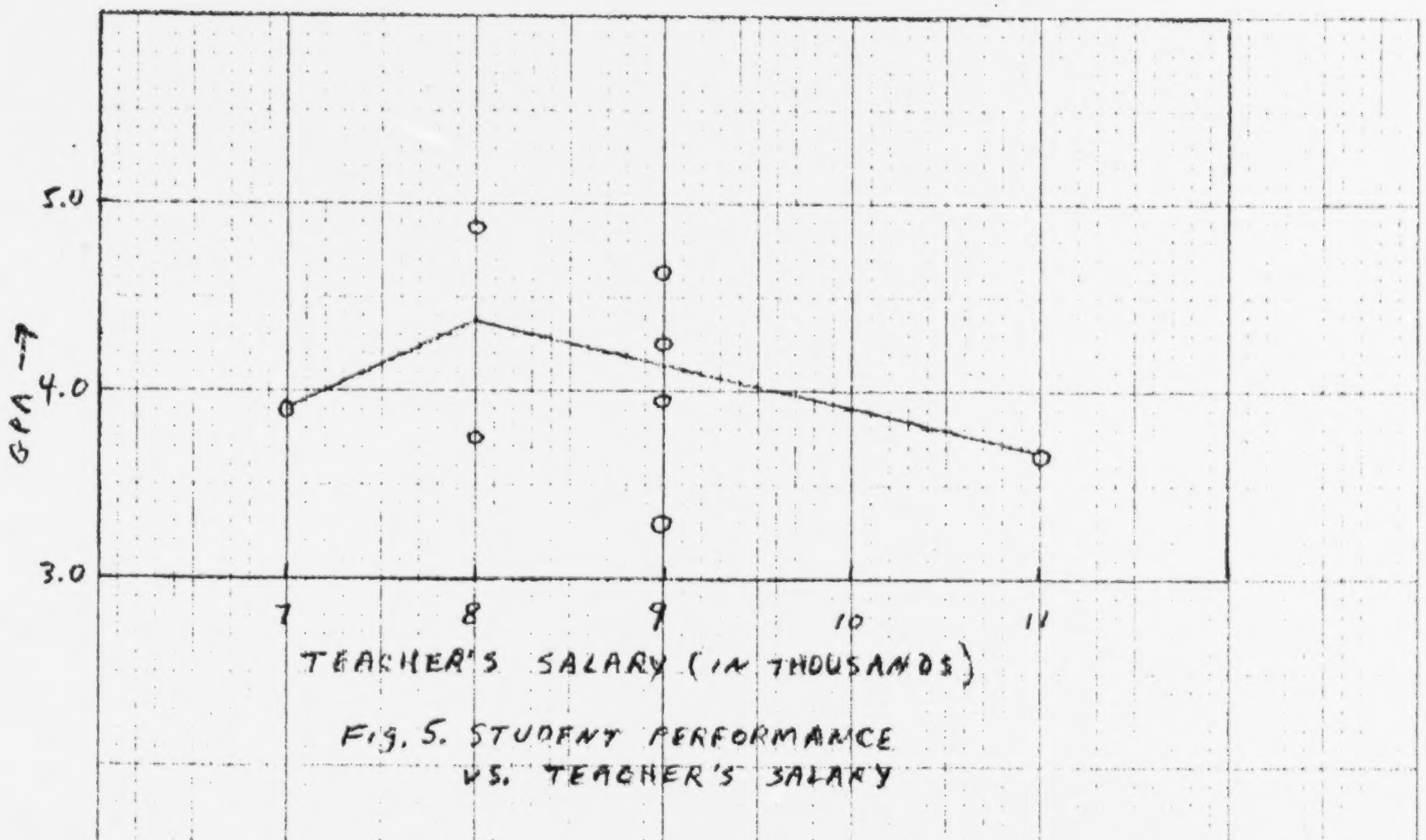

Fig. 5. STUDENT PERFORMANCE VS. TEACHER'S SALARY

The fifth grade student performance data for each group was further classified so as to include performance of minority* students only. Selecting the minority students results in 2 to 5 students in each averaged performance measure for each group. The resultant data, along with the teacher data is shown in Table 3. Plotting this grade point average data (3 measures: Arithmetic, English, and Overall Average) against the teacher characteristics results in the trends shown in Figures 6 through 17.

Some differences from the earlier graphs are discernible in the trends shown in here. Student performance peaks at the 20 to 25 year experience group and reaches an early (though not lowest) minimum at the 5 to 10 year experience group (Figures 6, 7). The minimum performance is again observed for the oldest experienced teachers. The early minimum is not observed when one considers overall performance, but the other trends are present. These trends should be compared with those of Figure 1, where the peak performance occurs among the 5 to 10 year experienced group.

The graphs of performance versus teacher's age (Figures 12 to 14) show somewhat similar trends. The plots of teacher's degree level vs. performance (Figures 15 to 17) do not show the previously observed trends of a gradual rise in performance with increasing degree level. In the overall performance plot this is somewhat true (Figure 17) but it is not for Arithmetic and English performance. Here the peak occurs at the AB degree level. Since we did not plot performance in Arithmetic and English previously we have no trends to compare. Further analysis is necessary.

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* Indian, Spanish-American, Oriental, Other and those who speak a foreign language at home, see page 5-4 of Dunn, et. al, op. cit.

Table 3

MINORITY STUDENT PERFORMANCE vs. TEACHER CHARACTERISTICS

Selected 5th Grade Students*

	Student Performance			Teacher Characteristics					
County	Arith. GPA	Engl. GPA	Average GPA	Exper-ience	Degree	Major	Age	Sex	Salary
E	4.05	4.05	4.20	2	1	2	30	F	9
H	3.50	4.10	3.85	1	1	3	25	F	7
B	3.00	3.17	4.07	2	4	3	34	M	8
G	3.40	2.50	3.05	6	1	1	60	F	9
C	3.75	4.50	4.45	5	2	3	55	F	8
D	4.20	4.20	4.30	1	2	4	32	M	11
F	4.00	4.50	4.30	5	2	3	56	F	9
A	3.02	2.62	3.05	6	1	2	65	F	9

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* See Footnotes to Table 1 for data description.

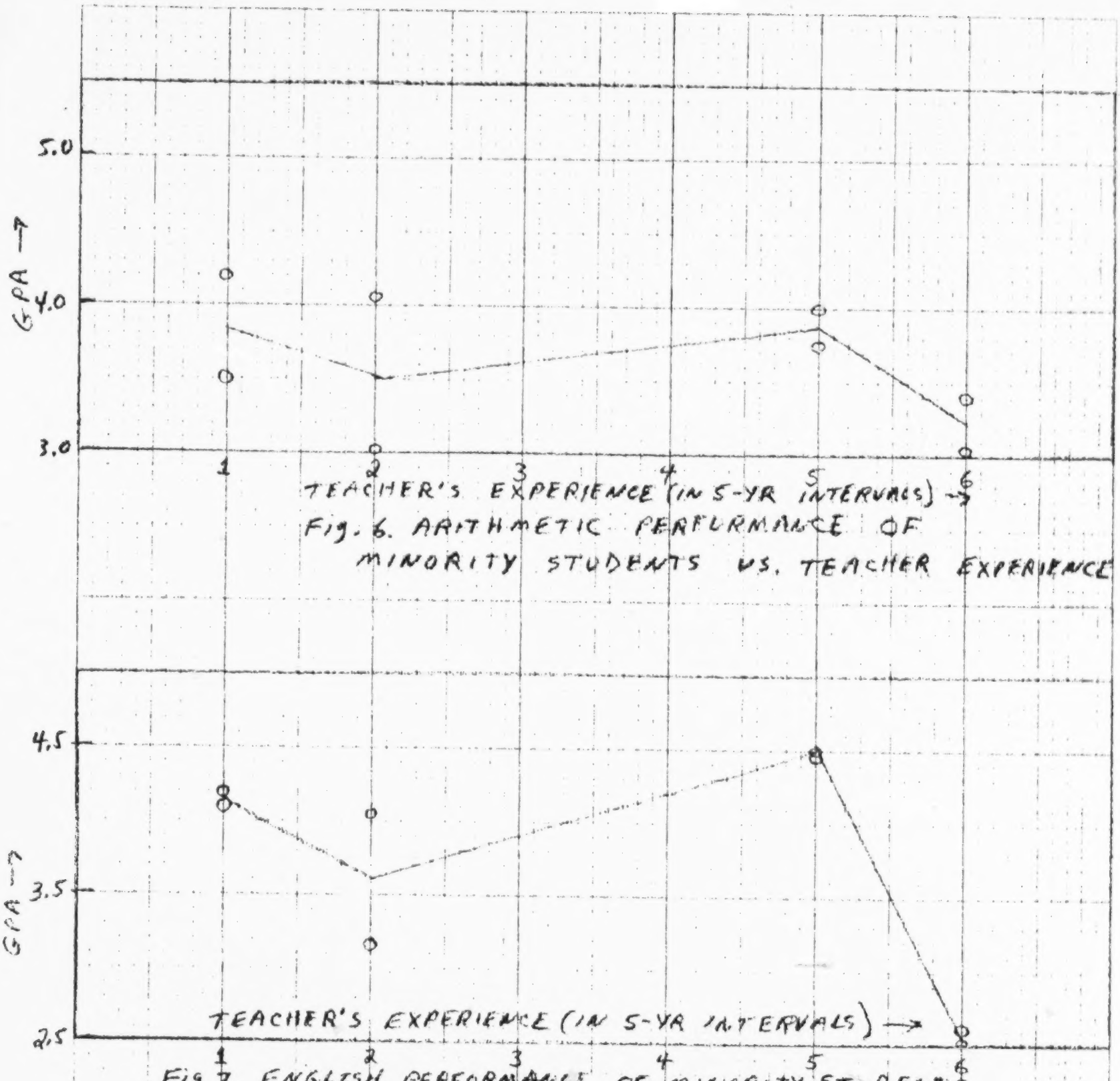

Fig. 6. ARITHMETIC PERFORMANCE OF MINORITY STUDENTS VS. TEACHER EXPERIENCE

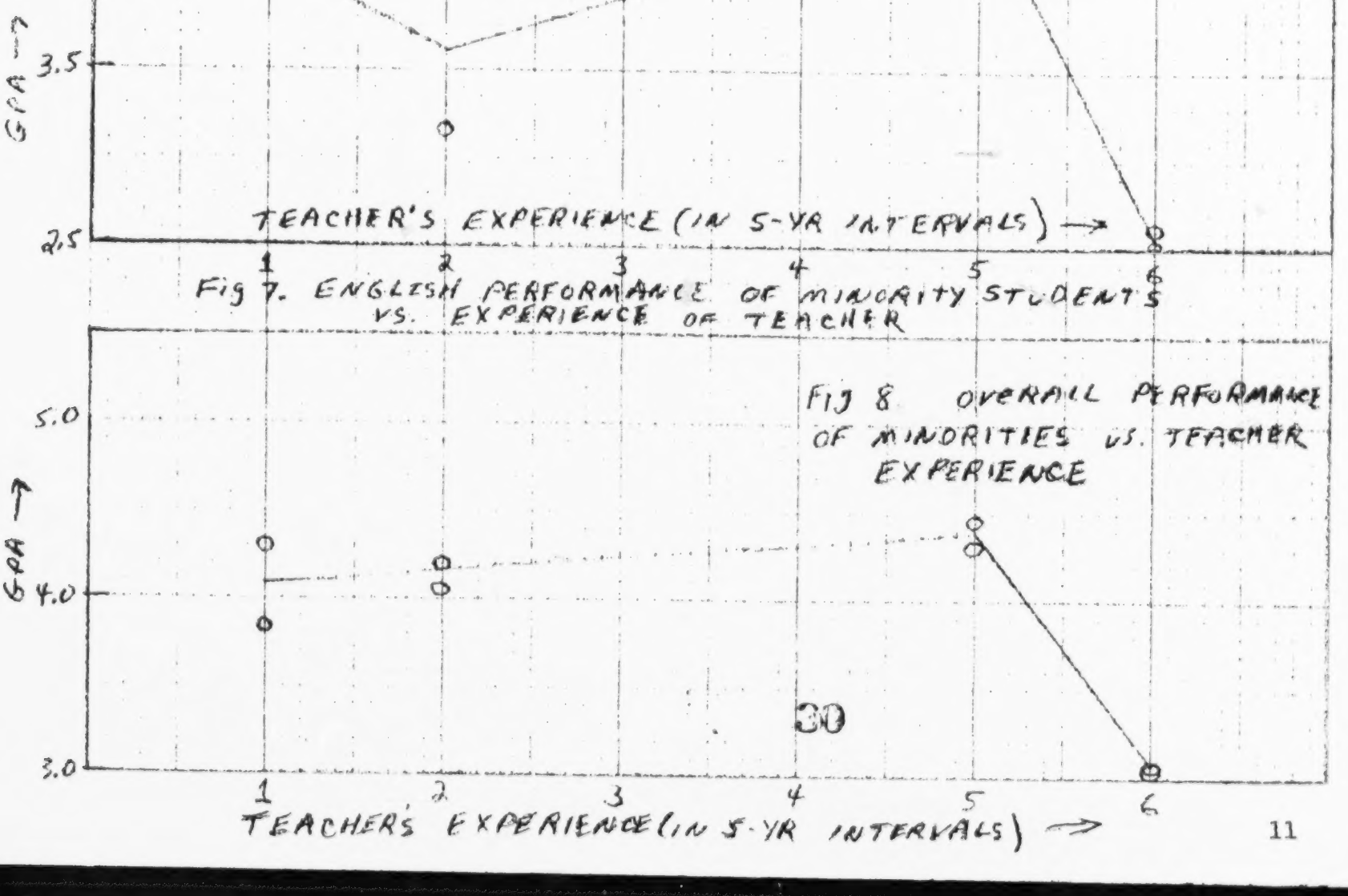

Fig 7. ENGLISH PERFORMANCE OF MINORITY STUDENTS VS. EXPERIENCE OF TEACHER

Fig 8 OVERALL PERFORMANCE OF MINORITIES VS. TEACHER EXPERIENCE

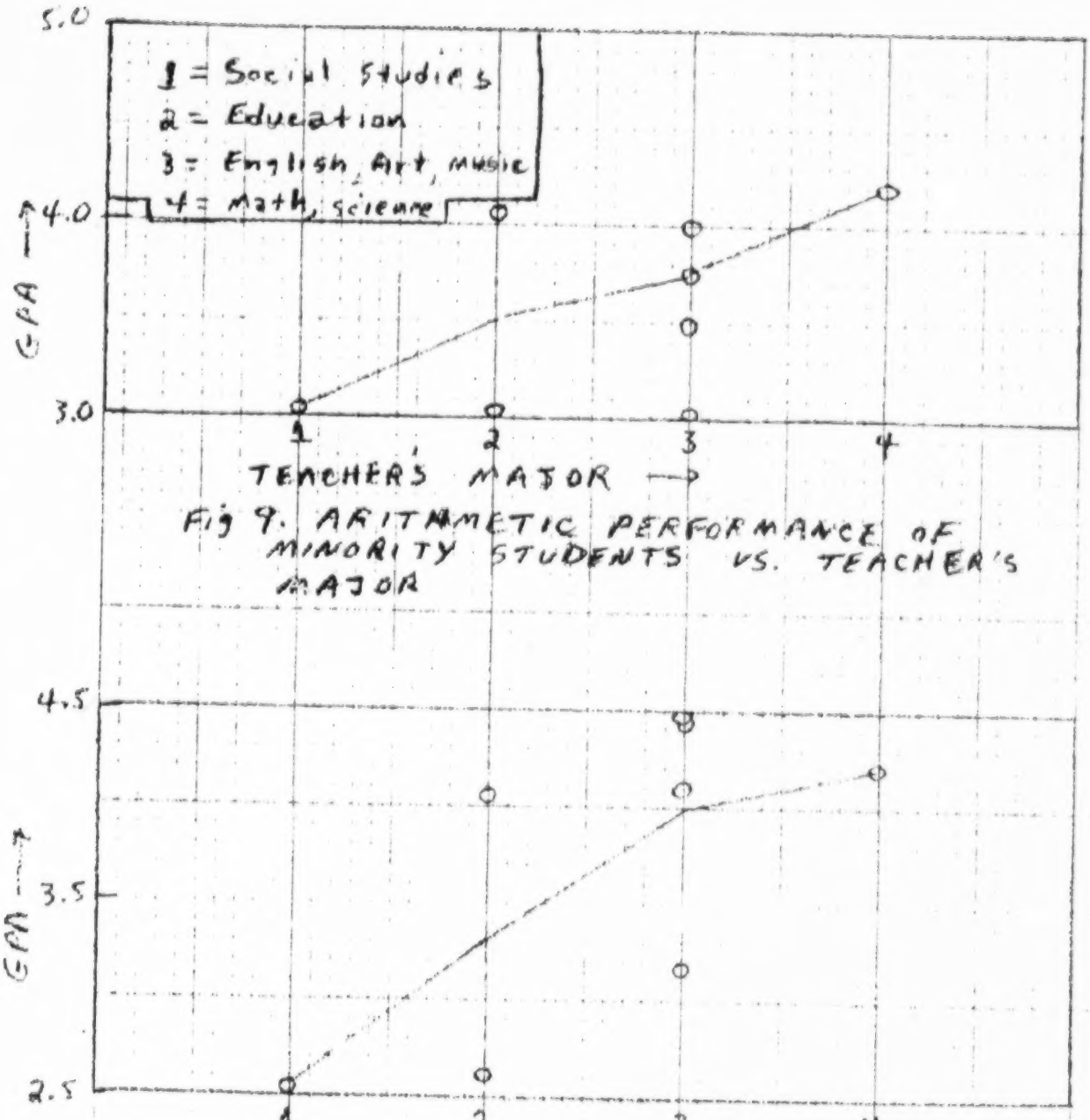

Fig 9. ARITHMETIC PERFORMANCE OF MINORITY STUDENTS VS. TEACHER'S MAJOR

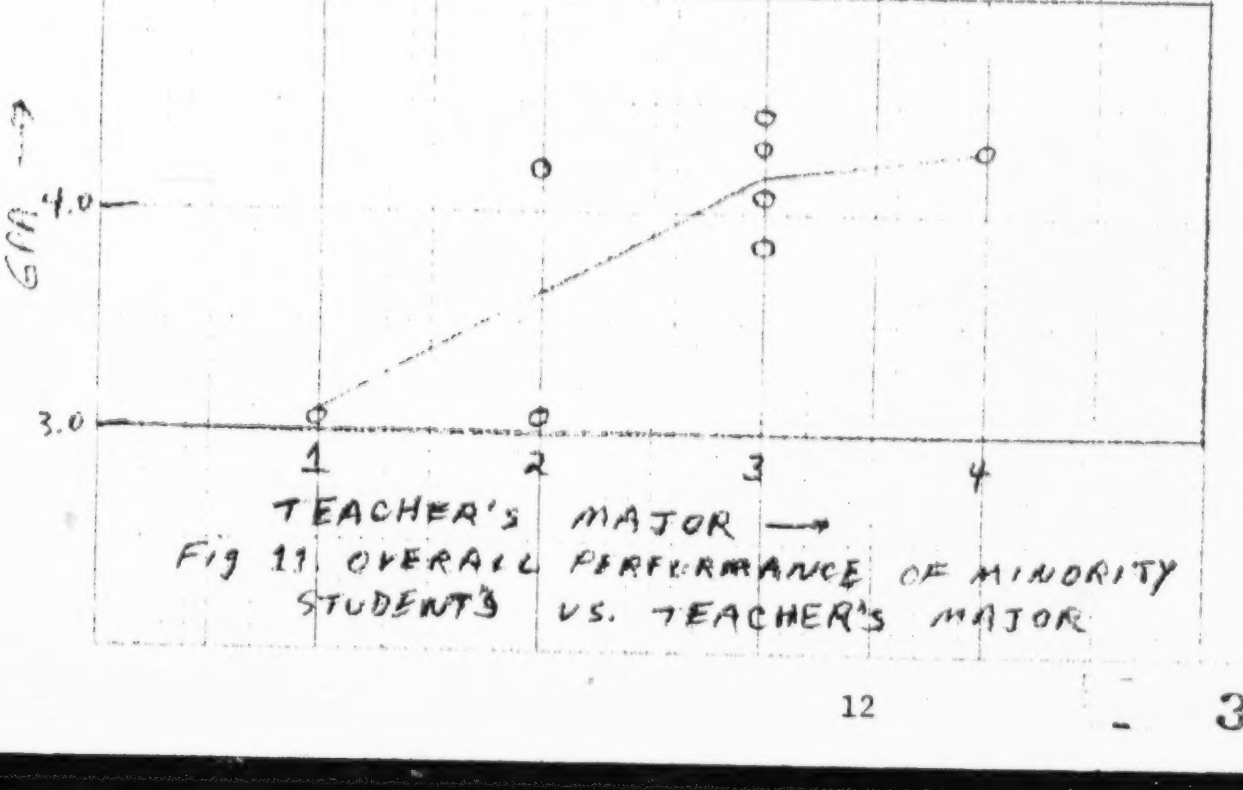

Fig 10. ENGLISH PERFORMANCE OF MINORITY STUDENTS VS. TEACHER'S MAJOR

Fig 11. OVERALL PERFORMANCE OF MINORITY STUDENTS VS. TEACHER'S MAJOR

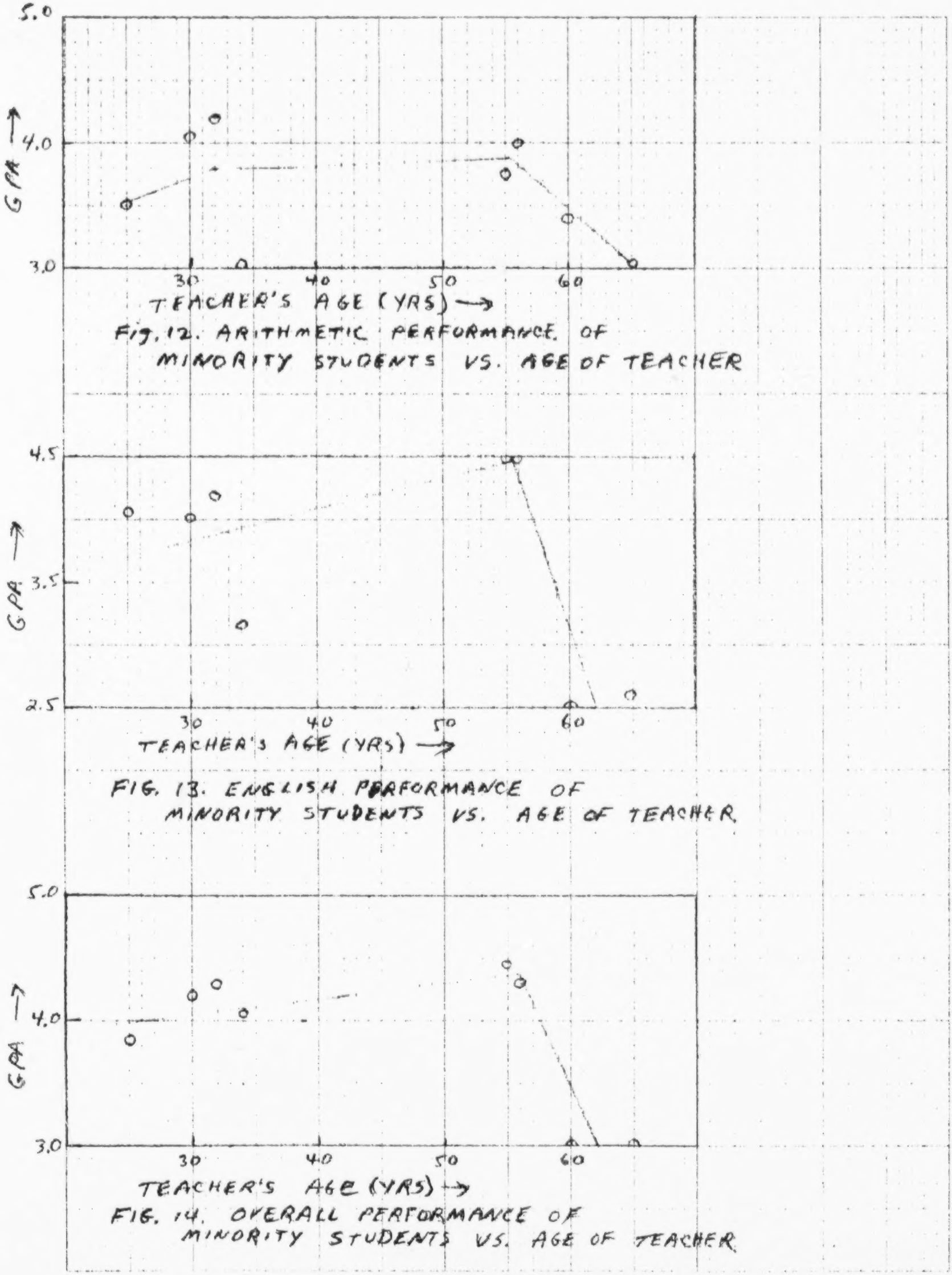

FIG. 12. ARITHMETIC PERFORMANCE OF MINORITY STUDENTS VS. AGE OF TEACHER

FIG. 13. ENGLISH PERFORMANCE OF MINORITY STUDENTS VS. AGE OF TEACHER

FIG. 14. OVERALL PERFORMANCE OF MINORITY STUDENTS VS. AGE OF TEACHER

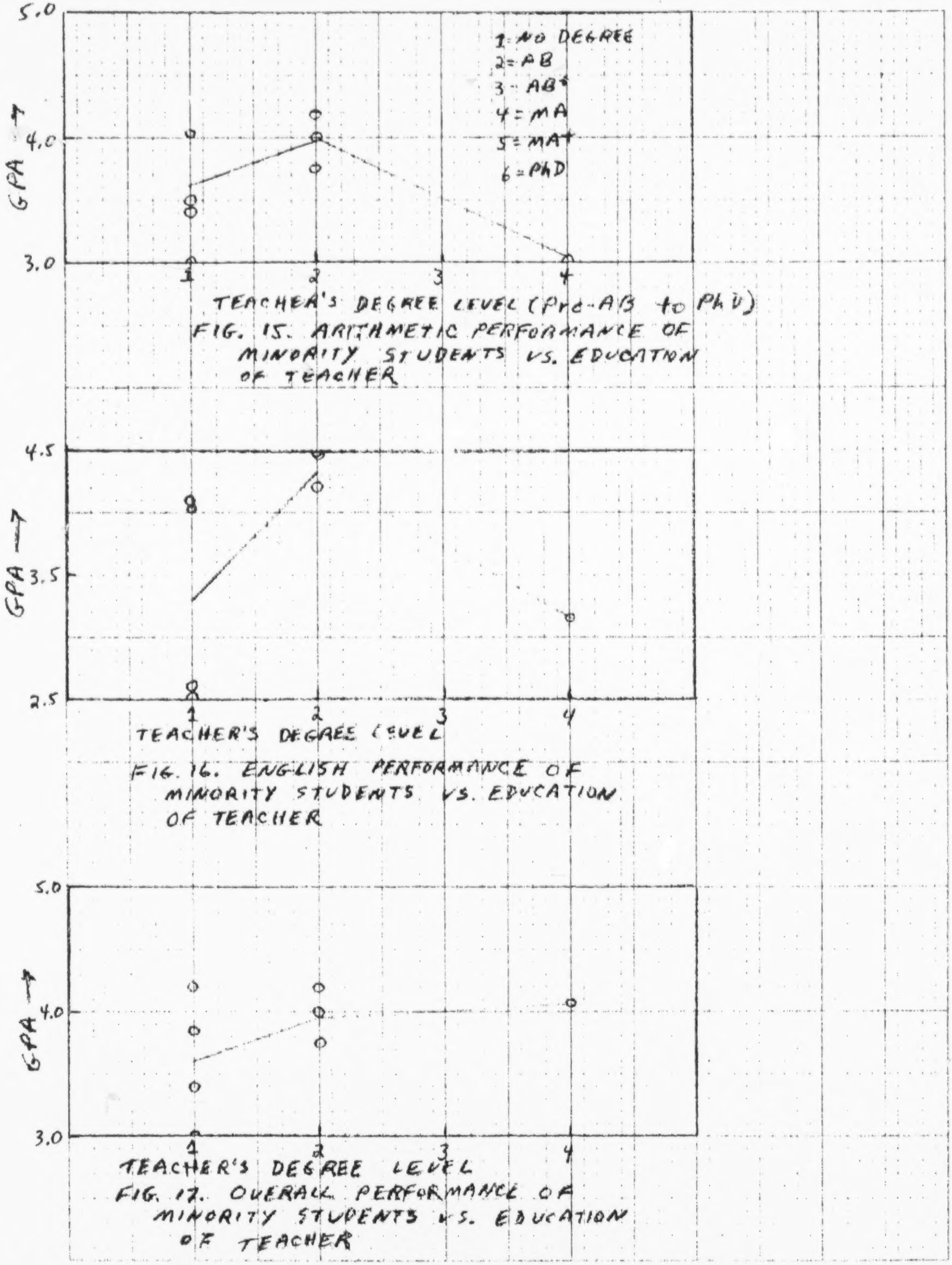

FIG. 15. ARITHMETIC PERFORMANCE OF MINORITY STUDENTS VS. EDUCATION OF TEACHER

FIG. 16. ENGLISH PERFORMANCE OF MINORITY STUDENTS VS. EDUCATION OF TEACHER

FIG. 17. OVERALL PERFORMANCE OF MINORITY STUDENTS VS. EDUCATION OF TEACHER

The trends for performance vs. "hardness" of the teacher's major shows a steady increase. The best student performance is for a teacher with the "hardest" degree major. This is the opposite of what was observed for the students overall, where the worst student performance was observed for teacher with the "hardest" (Math, Science) degree major. Could it be that the teacher with the most structured degree major is able to add support or give structure to minority students better than the teachers trained otherwise?

Additional analysis of this data, using a larger sample of the fifth grade students (around 100) has been performed using individual student GPA's and other student characteristics. This analysis consists of computer-generated bar graphs using an IBM - 360/20. The results are discussed in an appendix to this report.

ACHIEVEMENT TEST SCORES vs. TEACHER CHARACTERISTICS

In order to test the trends observed with the teachers of the sampled fifth grade classes from throughout the region, a further sample of 12 teachers from a nearby county was obtained. For this analysis Stanford Achievement sub-test performance* of students in 12 first, second and fourth grade classes were obtained. These performances (expressed as national percentiles in order to make comparisons across grade levels) along with the teacher characteristics obtained from the Department of Education Printouts[8] are displayed in Table 4. Plotting this performance data against the teacher characteristics results in the curves in Figs. 18 through 22.

The trends observable in this data are not too dissimilar from the curves discussed previously (Figs. 1 to 5). Student performance reaches a peak under teachers with 10 to 15 years experience (vs. 5 to 10 years observed previously) and then generally drops (Fig. 18). In Word-Meaning, however, the peak performance is for a teacher of 20-25 years experience. Student Performance peaks for teachers of about age 30 (Fig. 20) and for teachers with salaries of 8,000 dollars per year (Fig. 22). Comparing these Figs. with Figs. 4 and 5 reveals similar trends. Fig. 21 shows a slight rise in performance (or no rise) with increasing education (compare with Fig. 2). Student performance in Word Meaning peaks for teachers with English, Art, Music majors and falls off rapidly for teachers with Mathematics or Science majors. Compare this with the similar trend of Fig. 3. However, for the performance measure: Paragraph Meaning, the peak student performance occurs for teachers with an education major. Otherwise, the trends are similar.

---

* Stanford Achievement Sub-test Scores in Word Meaning and Paragraph Meaning, April 1970.

[8] Total Teachers and Certified Teachers, op. cit.

Table 4

OVERALL STUDENT PERFORMANCE vs. TEACHER CHARACTERISTICS

SPRING 1970

COUNTY B

Teacher	Perf. Measure (Nat. %)		Teacher Characteristics *					
	Word Mean+	Para Mean+	Exper-ience	Degree	Major	Age	Sex	Salary
A	16	40	7	2	4	63	F	11
B	76	64	2	2	2	59	F	9
C	50	54	4	1	3	58	F	9
D	69	72	1	1	1	30	F	9
E	50	38	2	1	1	58	F	7
F	38	50	7	2	3	68	F	10
G	56	40	4	2	4	56	F	9
H	76	84	3	1	3	38	F	8
I	53	46	1	2	2	38	F	8
J	88	84	1	2	3	30	F	8
K	80	62	5	2	3	59	F	10
L	42	41	1	1	2	31	F	7

* See Footnotes to Table 1 for data description.

+ Stanford achievement sub-test Spring 1970, National percentile for each group.

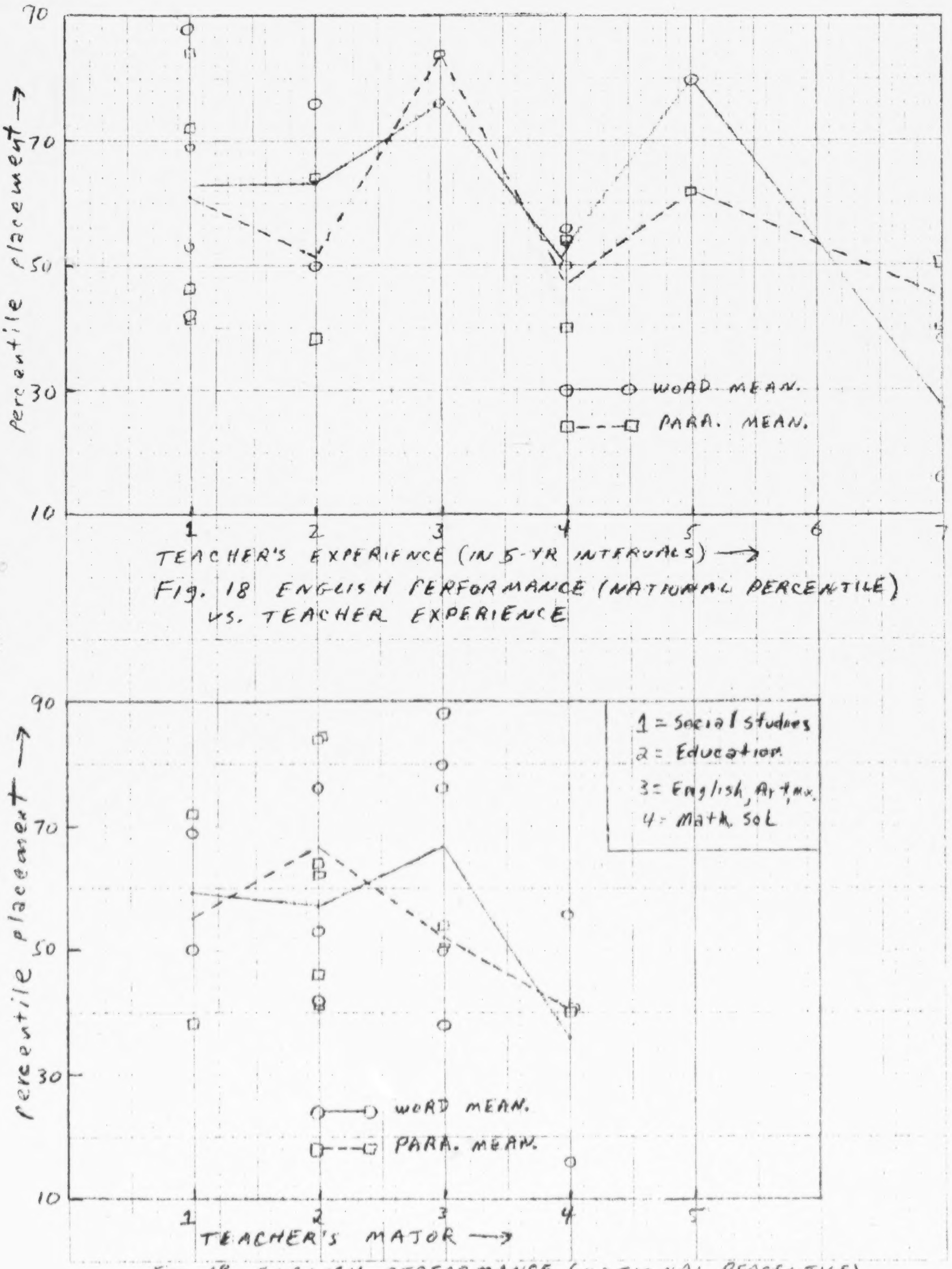

Fig. 18 ENGLISH PERFORMANCE (NATIONAL PERCENTILE) VS. TEACHER EXPERIENCE

Fig. 19 ENGLISH PERFORMANCE (NATIONAL PERCENTILE) VS. TEACHER'S MAJOR

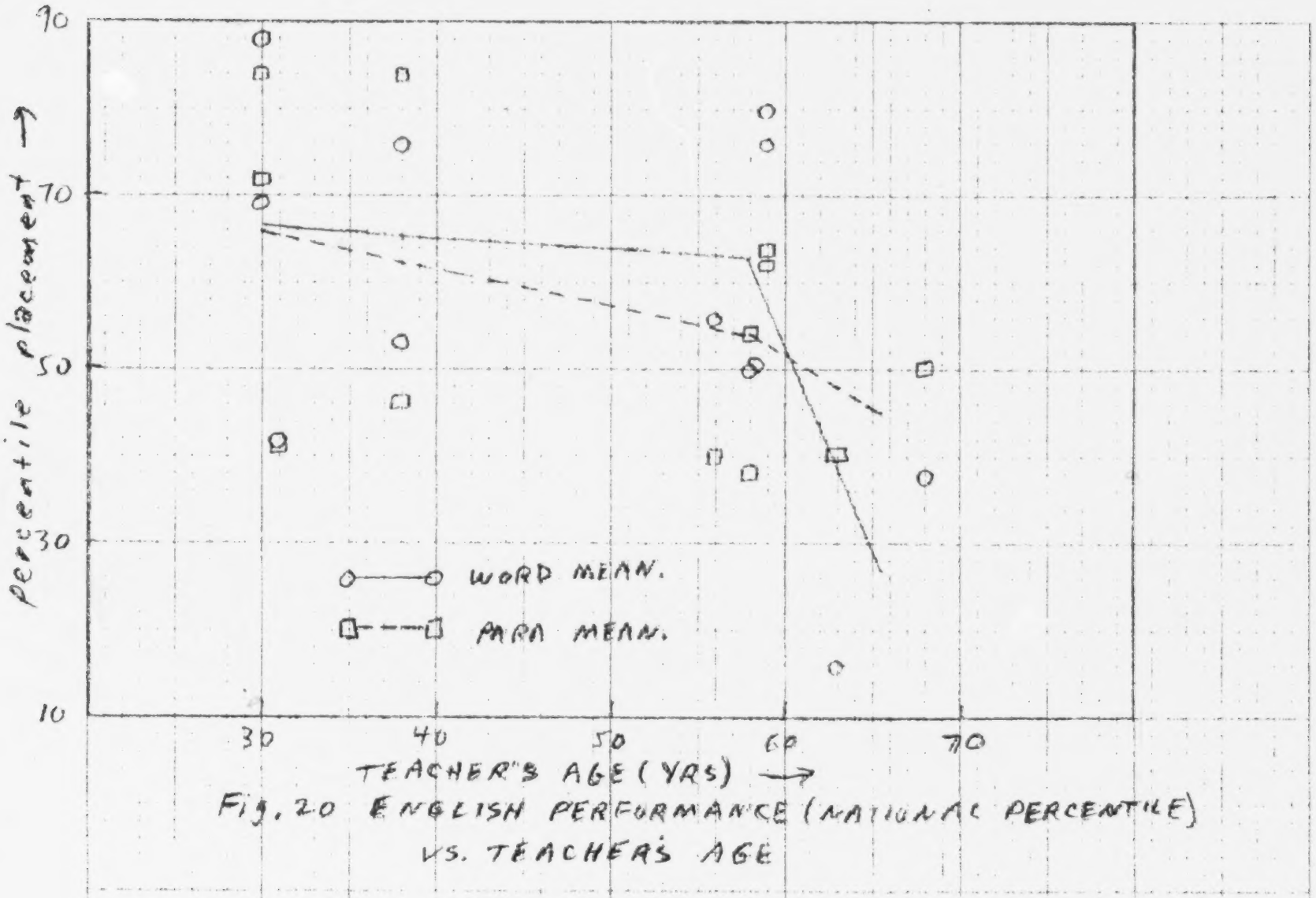

Fig. 20 ENGLISH PERFORMANCE (NATIONAL PERCENTILE) VS. TEACHER'S AGE

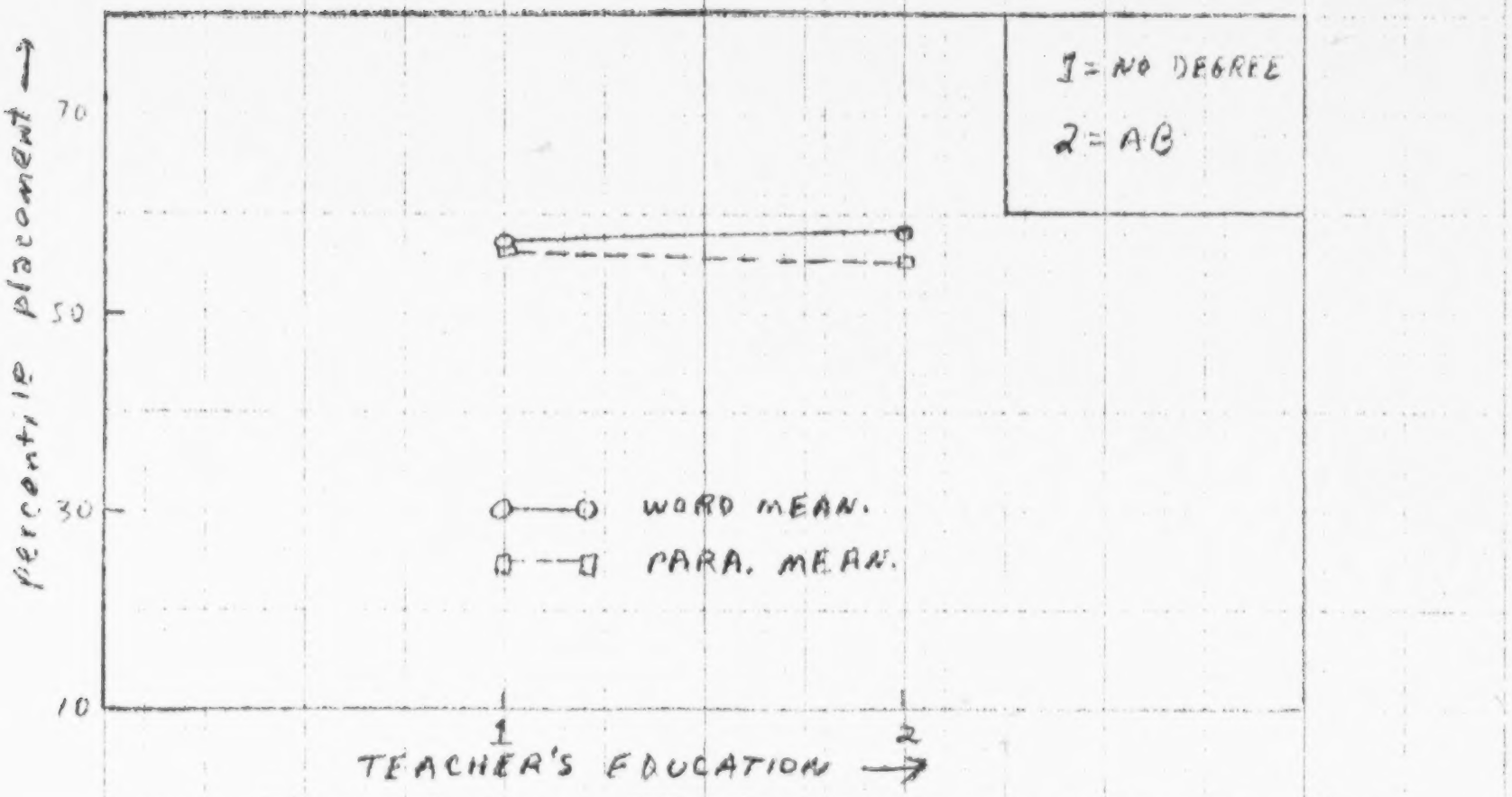

Fig 21. ENGLISH PERFORMANCE (NATIONAL PERCENTILE) VS. TEACHER'S EDUCATION

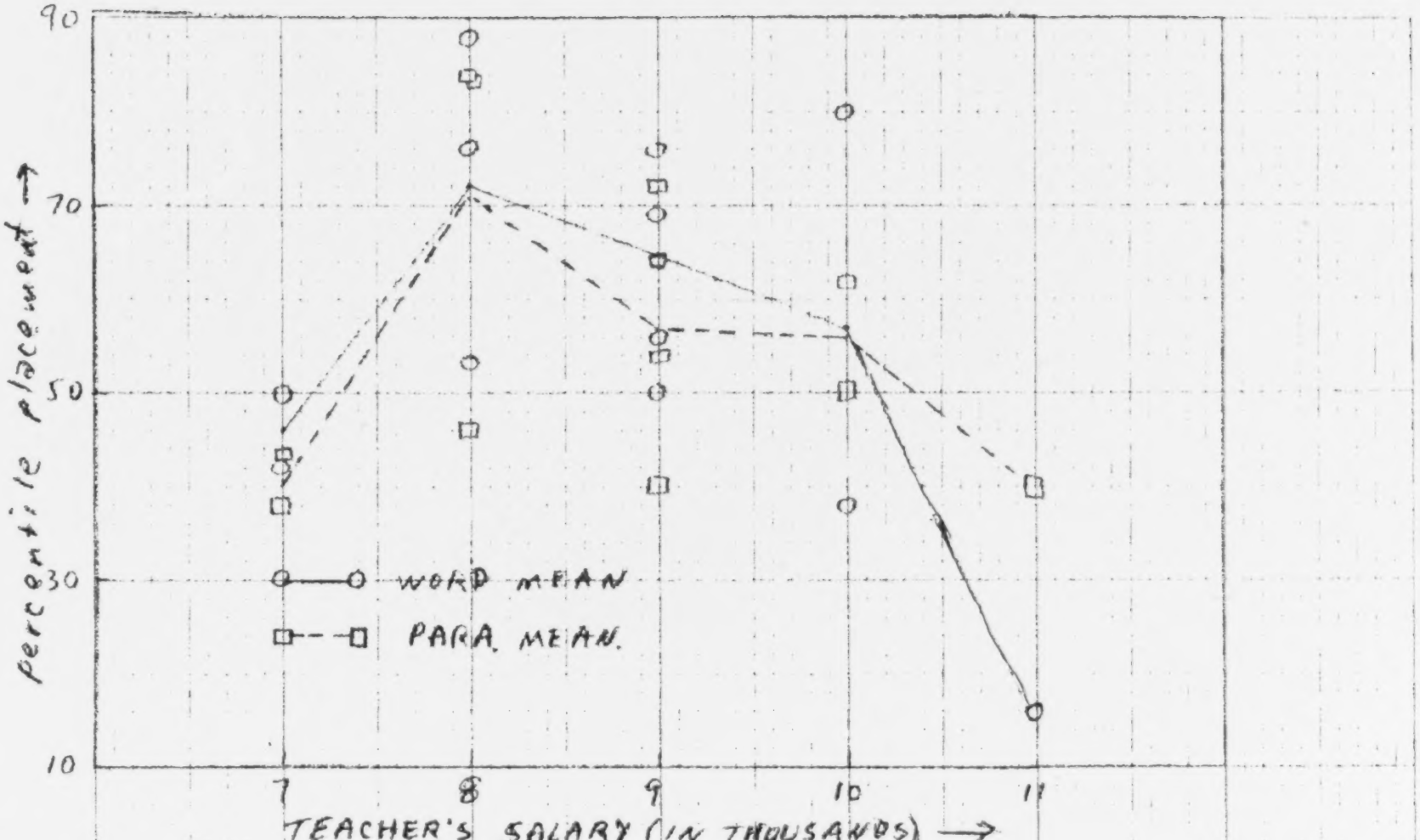

Fig 22. ENGLISH PERFORMANCE VS. TEACHER'S SALARY

Isolating the minority students (Indians and Spanish-Americans) for these teachers and computing their average performances on the two Stanford sub-tests results in the data compiled in Table 5. Some of the averaged performance measures are based on one or two students, so the data is suspect. Nevertheless, if we plot the data of Table 5 as performance vs. teacher characteristic we obtain the trends shown in Figs. 23 to 31.

In examining these figures, we find that English performance peaks under teachers with 20 to 25 years experience (Fig. 23), different from the peak in Fig. 18, although there is a second peak at this same position. For the performance measure Word Meaning, the second peak of Fig. 18 is the highest and main peak. However, this peak agrees with that previously observed for minority students in the 8-county sample (Fig. 6).

The plot of teachers' age vs. performance for these minority students indicates a peak at 30 years, in accord with that previously observed for the students overall (Fig. 20) and not in agreement with the peak at 55 years previously observed for minority students (Fig. 14).

The peak performance for these minority students occurs for teachers with English, Art, Music degree majors (both performance measures), a result which is similar to the previously observed peak for the overall performance of students in this county (Fig. 19). However, the performance of these minority students reaches a sharp minimum for teachers with an education major (Fig. 24), different from the overall performance (Fig. 19). Perhaps this is more in accord with the trend previously observed for minorities (Fig. 11). However, two points are dissimilar: we presently observe a high performance level under social studies majors ("softest" major) and a low performance level under science and

mathematics majors ("hardest" major). The trends in performance for the middle two majors (Education; English, Art, Music) are similar, however.

The performance of minority students increases sharply (especially for the Word Meaning measure) with increasing education of the teacher (Fig. 26). This trend is similar (though more pronounced) to that observed for the students overall (Fig. 21), for minority students (Fig. 17), and for all of the students in the previous 8-county sample.

Table 5

MINORITY STUDENT PERFORMANCE vs. TEACHER CHARACTERISTICS

SPRING 1970

COUNTY B

Teacher	Perf. Measure (Nat. %)		Teacher Characteristics*					
	Word Mean+	Para Mean+	Experience	Degree	Major	Age	Sex	Salary
A	16	40	7	2	4	63	F	11
B	30	44	2	2	2	59	F	9
D	64	64	1	1	1	30	F	9
E	54	33	2	1	1	58	F	7
F	62	50	7	2	3	68	F	10
G	50	50	4	2	4	56	F	9
H	80	68	3	1	3	38	F	8
I	28	41	1	2	2	38	F	8
K	88	62	5	2	3	59	F	10

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* See Footnotes to Table 1 for data description.

+ Stanford achievement sub-test, Spring 1970, National percentiles for each group.

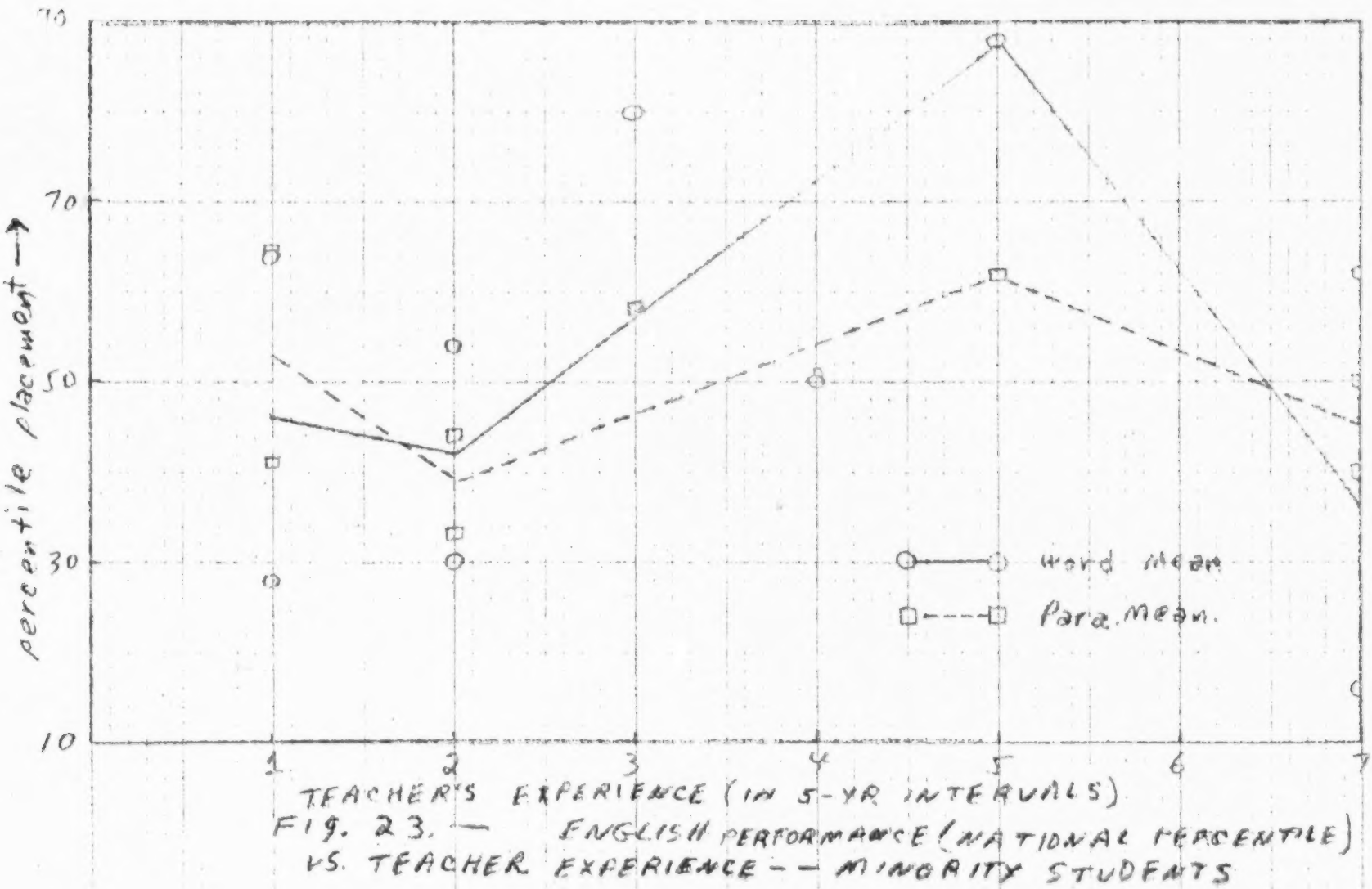

FIG. 23. — ENGLISH PERFORMANCE (NATIONAL PERCENTILE) VS. TEACHER EXPERIENCE -- MINORITY STUDENTS

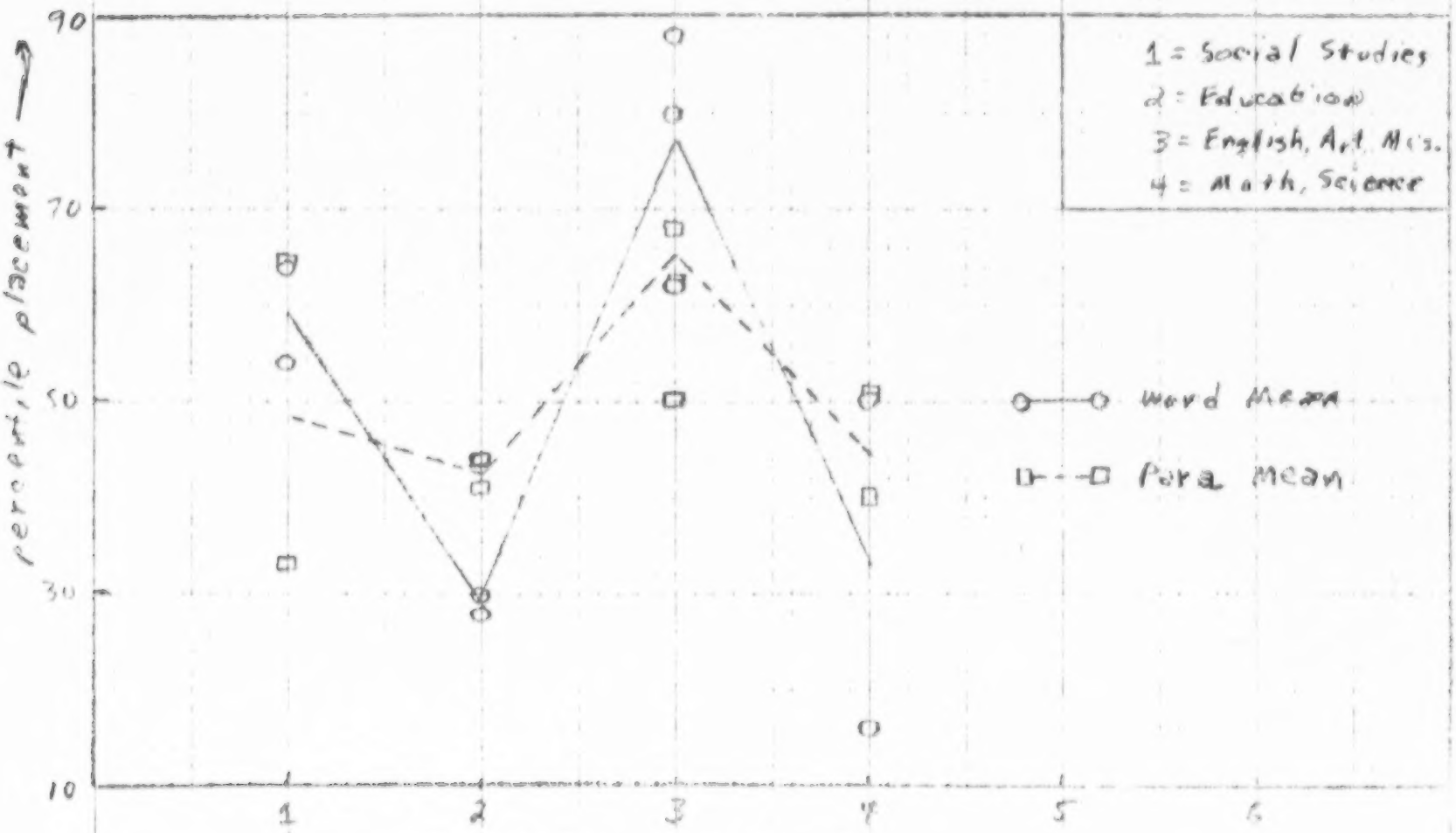

Fig 24. ENGLISH PERFORMANCE (NATIONAL PERCENTILE) VS. TEACHER'S MAJOR -- MINORITY STUDENTS

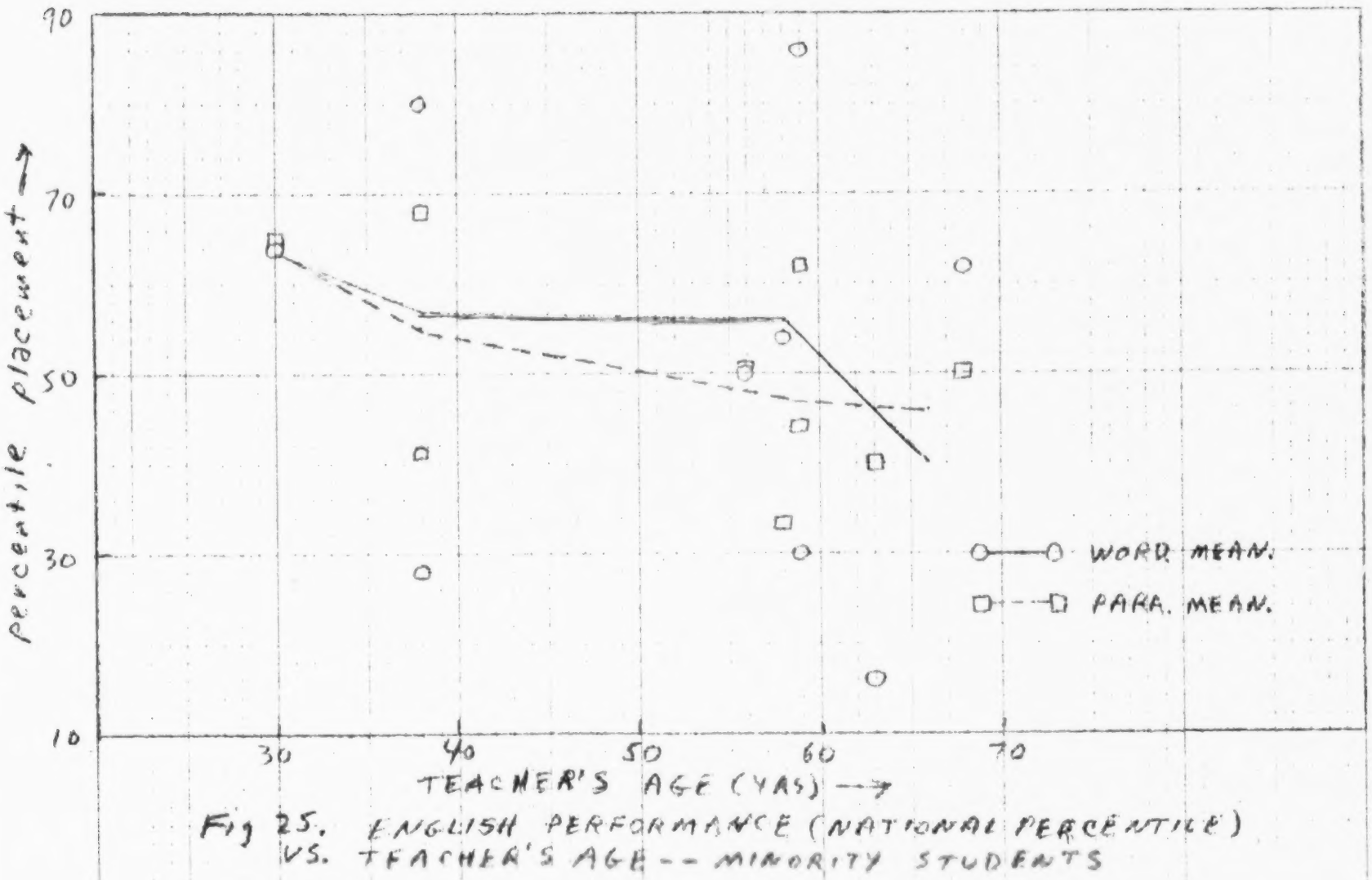

Fig 25. ENGLISH PERFORMANCE (NATIONAL PERCENTILE) VS. TEACHER'S AGE -- MINORITY STUDENTS

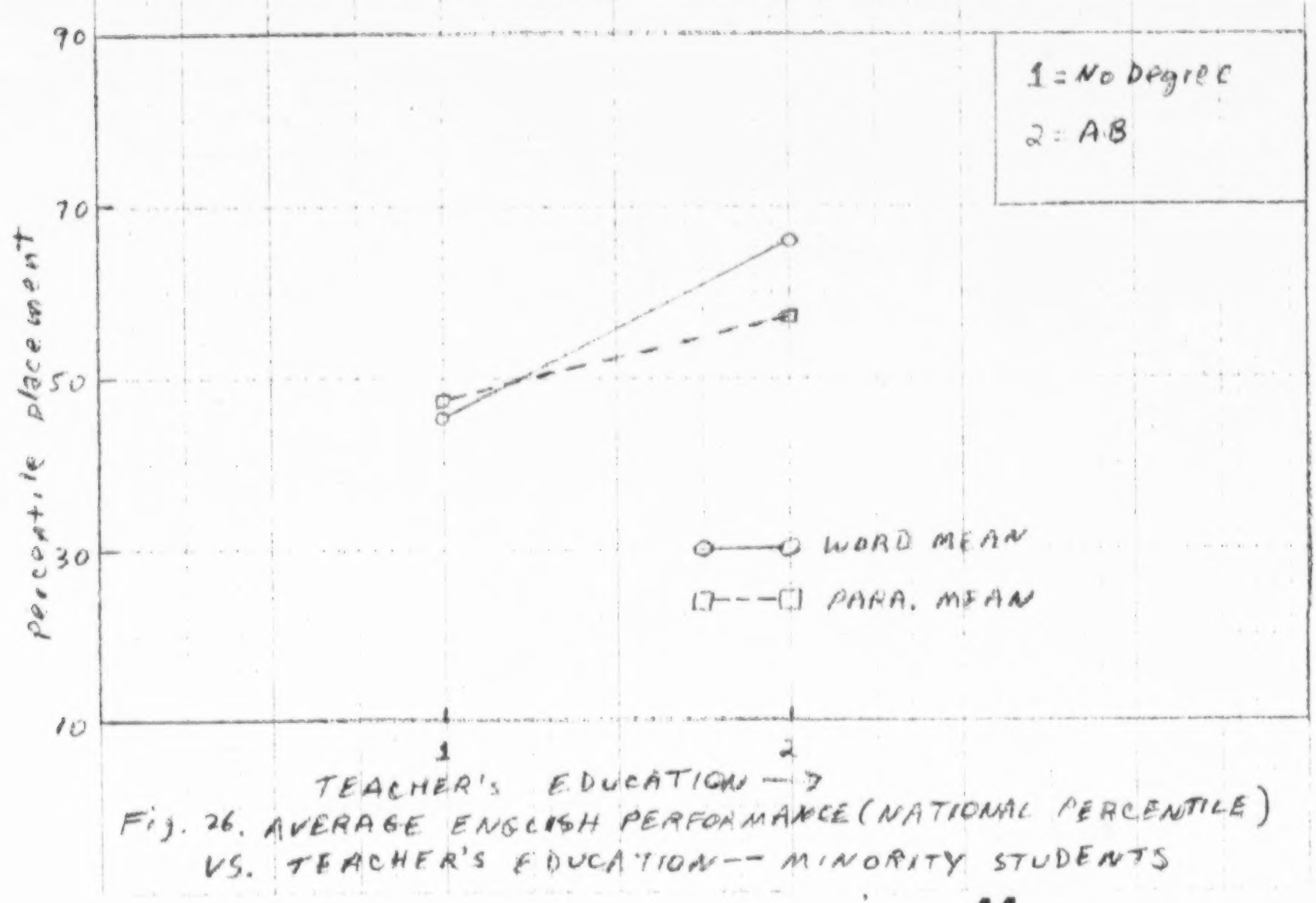

Fig. 26. AVERAGE ENGLISH PERFORMANCE (NATIONAL PERCENTILE) VS. TEACHER'S EDUCATION -- MINORITY STUDENTS

ACHIEVEMENT TEST GAIN SCORES vs. TEACHER CHARACTERISTICS

Another performance measure for an additional sample of students in nearby County B at grade levels 1, 2, 3 and 5 was obtained. This was gain score over a 4½ month period on the Stanford Achievement Sub-tests; Word Meaning and Paragraph Meaning. The average gain scores for 14 classes of students along with the characteristics of their teachers are shown in Table 6. This data is plotted in Figs. 27-31.

These trends show some differences from those observed previously. For example, even though the peak performance for students still occurs for the 5 to 10-year experienced teachers (Fig. 27), there is little or no fall-off with increasing experience (compare with Figs. 1 and 18). There is a slight drop at 15 to 20 years of experience, but then a recovery follows for the more experienced teachers. For performance vs. teacher's age (Fig. 29), the peak again occurs at age 35 and then falls off, but not as rapidly as previously observed (Figs. 4 and 20). For performance vs. salary (Fig. 31) the peak performance occurs early (at $8,000/year) but the fall off with increasing salary is not as rapid as previously (Figs. 5 and 22). Peak performance as a function of teacher's major (Fig. 28) occurs at the high ("hardest" major) end as opposed to the previously observed drop at this position (Figs. 3 and 19). Student performance increases with increasing teacher's education (Fig. 30) in accord with the previous trends (Figs. 2 and 21). Hence, one could say that for the overall student performance, all three samplings give similar results, the only serious discrepancies occurring for performance vs. teacher's major and to a lesser degree for performance vs. experience.

Isolating the minority students (Indian and Spanish-American) in County B and computing their average gain scores by classroom results in the average gain

Table 6

OVERALL STUDENT PERFORMANCE vs. TEACHER CHARACTERISTICS

NOVEMBER-MARCH 1971

COUNTY B

Teacher	Gain (Months)		Teacher Characteristics*					
	Word Mean+	Para Mean+	Exper-ience	Degree	Major	Age	Sex	Salary
A	6.30	4.10	7	2	4	63	F	11
C	6.50	8.82	4	1	3	58	F	9
D	3.08	-5.66	1	1	1	30	F	9
E	6.34	4.83	2	1	1	58	F	7
F	6.62	1.00	7	2	3	68	F	10
M	4.75	4.75	2	1	2	45	F	8
N	5.28	1.64	4	2	1	57	F	10
O	3.18	3.82	3	2	3	48	F	10
P	-2.08	2.00	1	2	2	24	F	7
Q	6.67	10.68	1	2	2	35	F	8
R	9.17	4.66	2	3	4	35	M	7
S	4.09	5.00	3	2	1	58	F	11
T	-4.09	-3.82	1	1	2	50	F	7
U	3.77	5.84	1	2	2	23	F	7

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* See Footnotes to Table 1 for data description.

+ Stanford sub-test gain scores (November-March).

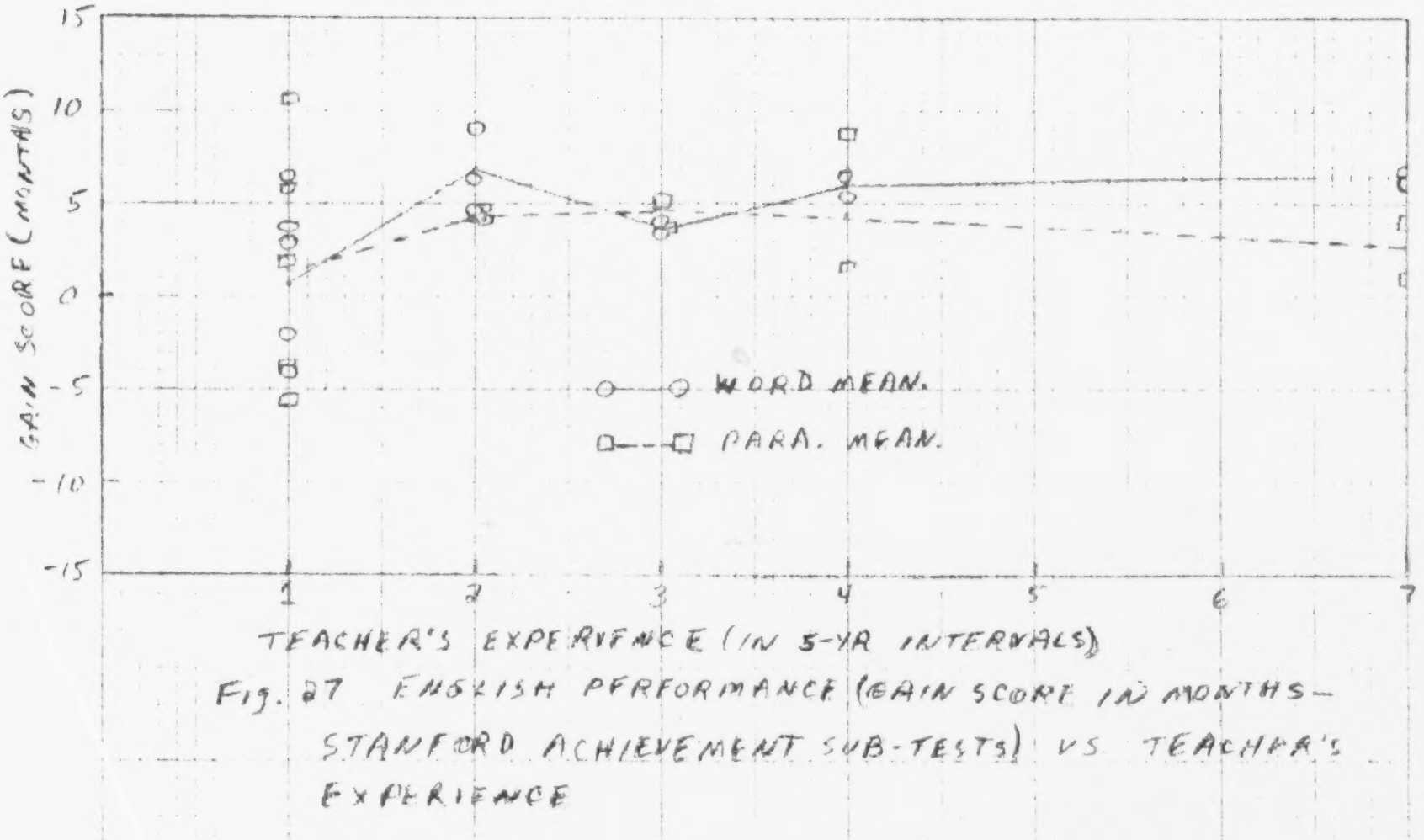

Fig. 27 ENGLISH PERFORMANCE (GAIN SCORE IN MONTHS — STANFORD ACHIEVEMENT SUB-TESTS) VS TEACHER'S EXPERIENCE

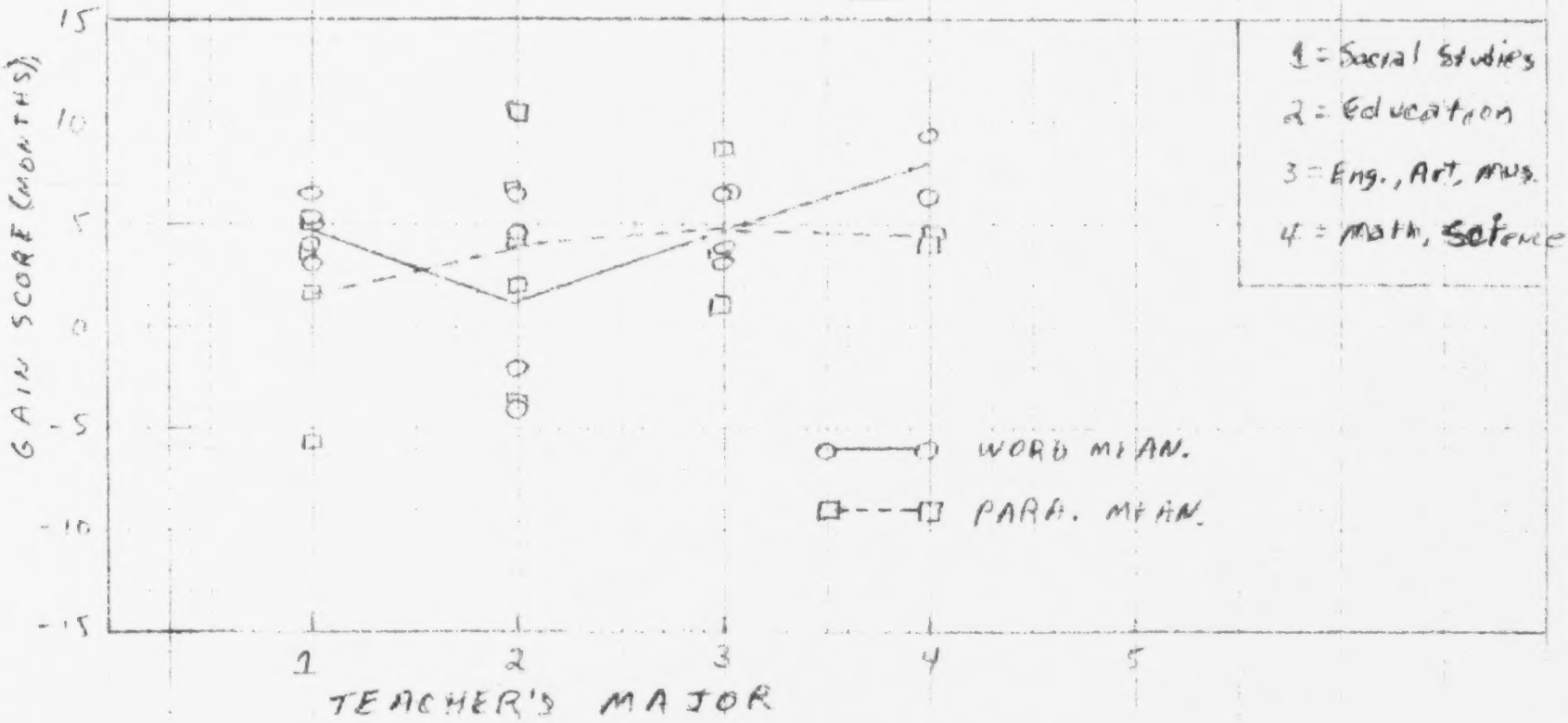

Fig. 28 ENGLISH PERFORMANCE (GAIN SCORE IN MONTHS — STANDARD ACHIEVEMENT SUB-TESTS) VS. TEACHER'S MAJOR

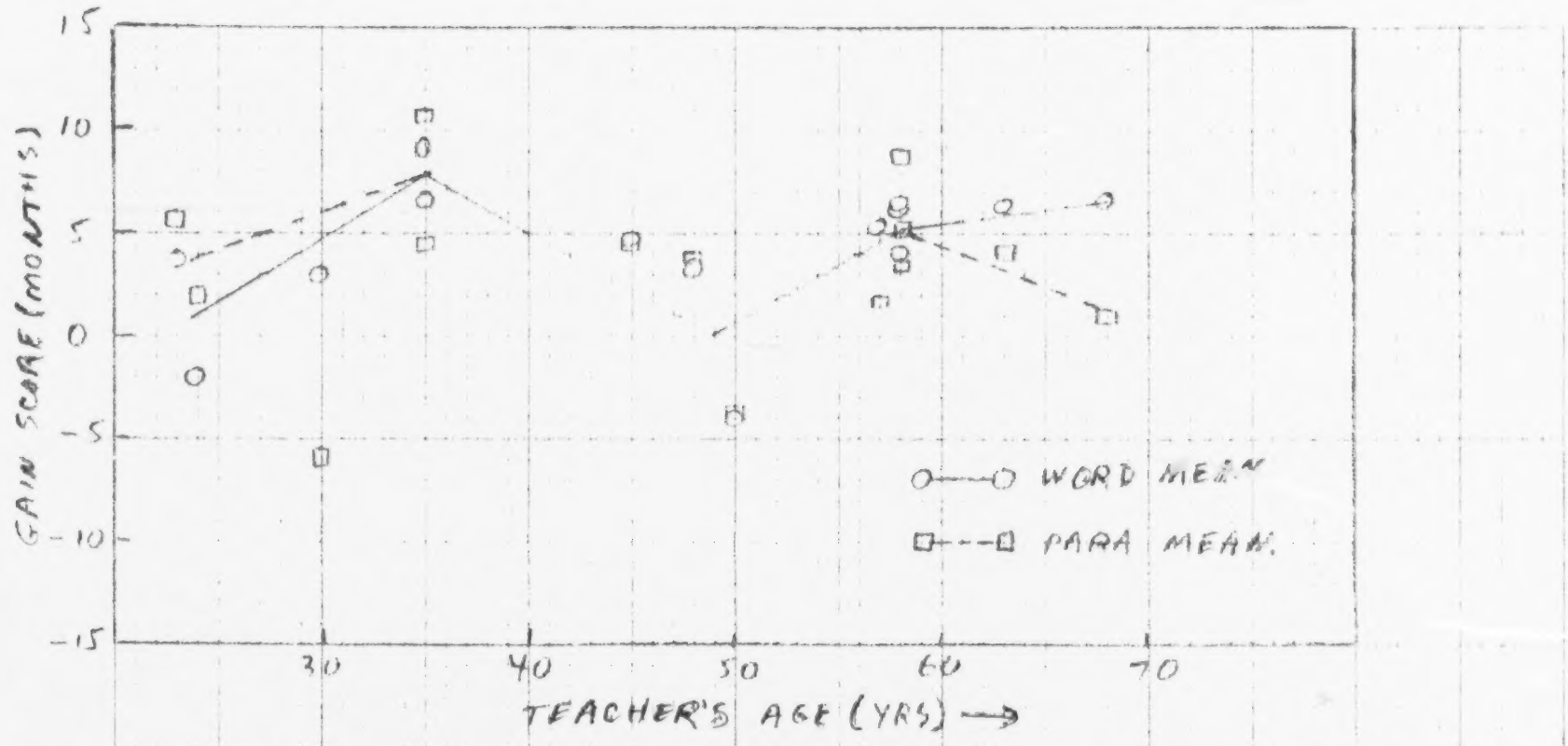

Fig. 29 ENGLISH PERFORMANCE (GAIN SCORE IN MONTHS - STANFORD ACHIEVEMENT SUB-TESTS) VS. TEACHER'S AGE

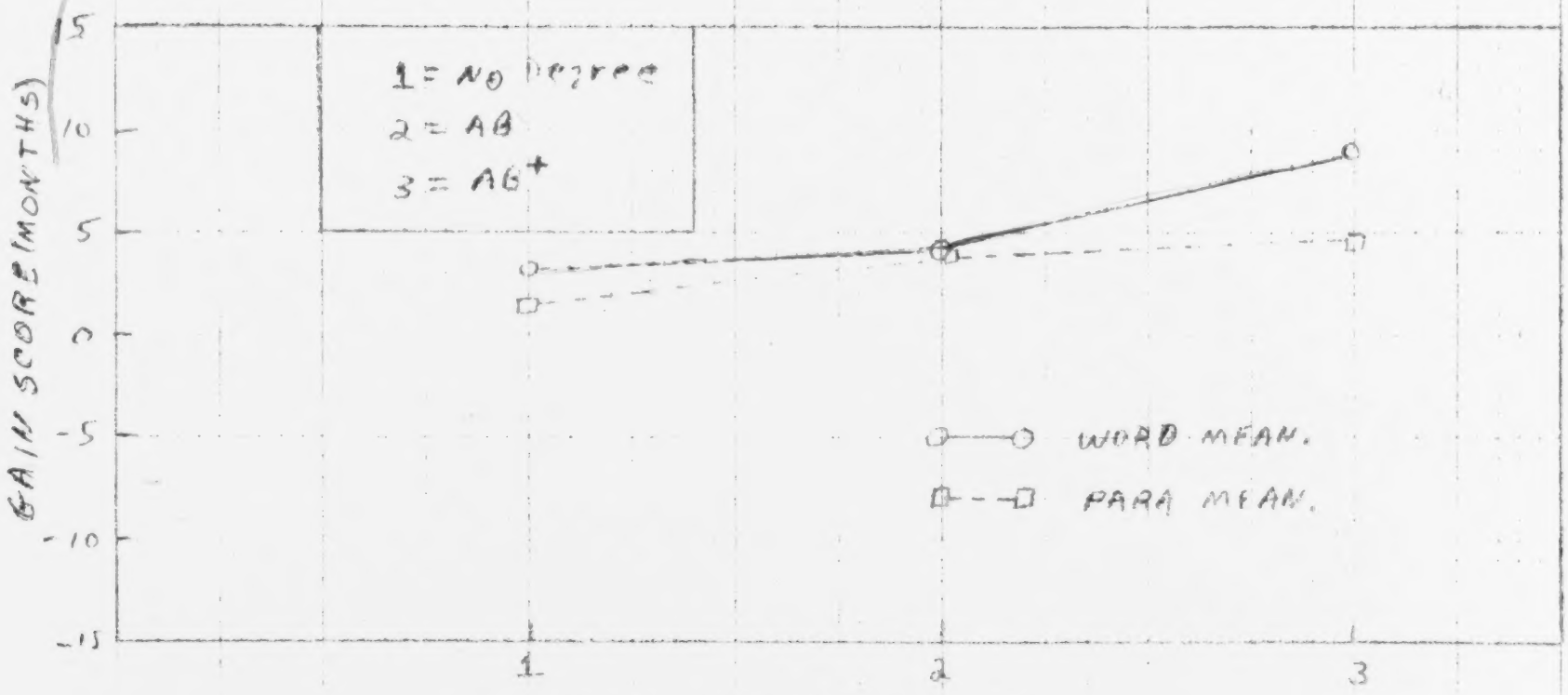

Fig. 30 ENGLISH PERFORMANCE (GAIN SCORE IN MONTHS - STANFORD ACHIEVEMENT SUB-TESTS) VS. TEACHER'S EDUCATION

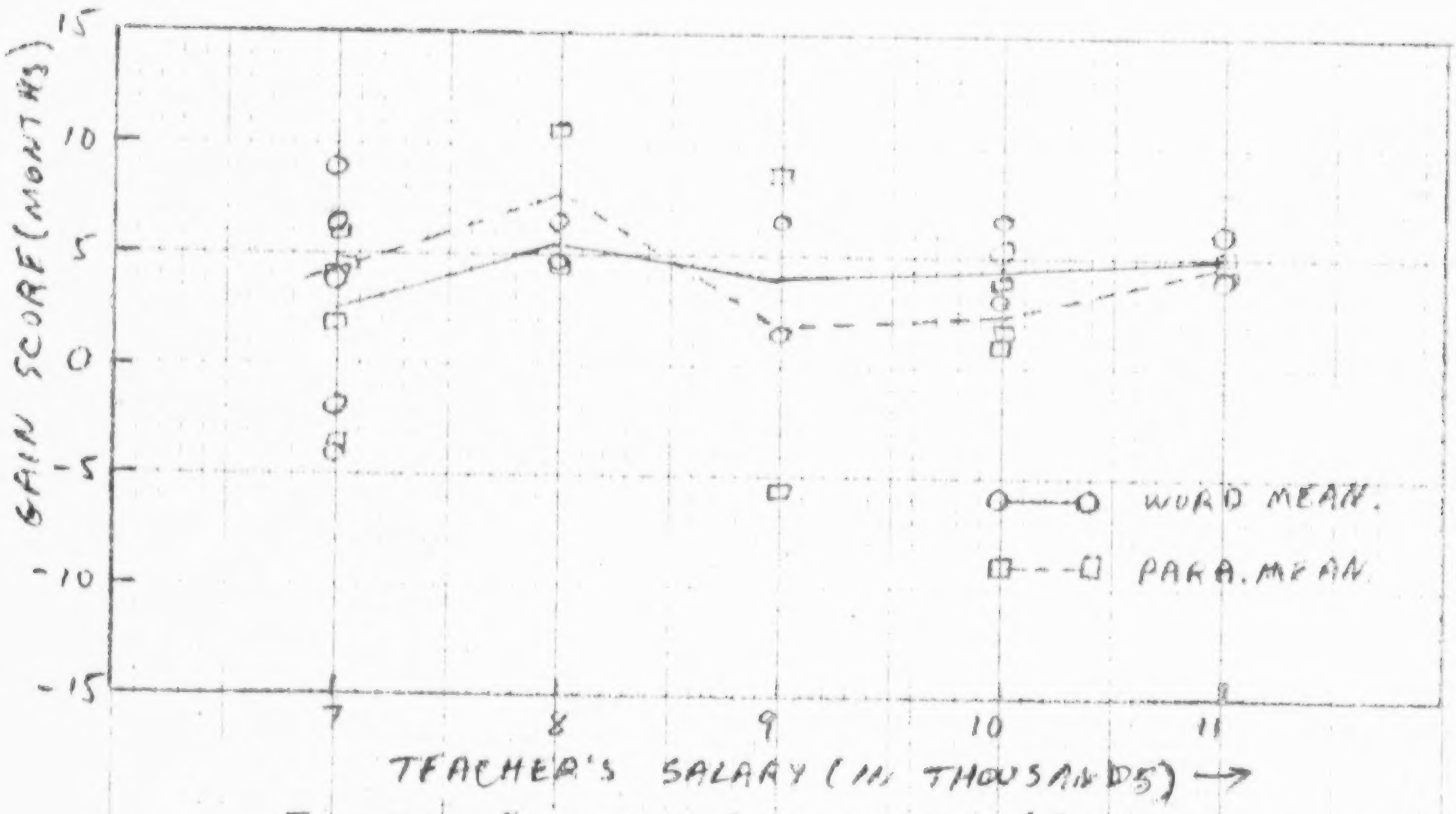

FIG. 31. ENGLISH PERFORMANCE (GAIN SCORE IN MONTHS — STANFORD ACHIEVEMENT SUB-TESTS) VS. TEACHER'S SALARY.

scores shown in Table 7. Most of these minority average gain scores are for single students, all except groups D, Q and R, so the results must be treated with caution. The data for these mean performances are shown in Figs. 32 through 35.

A plot of minority student performance vs. teacher's experience (Fig. 32) shows a peak performance at 15 to 20 years experience for Word Meaning followed by a drop-off with increasing experience but a peak for Paragraph Meaning at 0 to 5 years with another peak at 20 to 25 years experience followed by a drop in performance with increasing experience. This trend is different from that for overall performance for this group of classes (Fig. 27) which had a peak at 5 to 10 years but no serious drop with increasing experience. This trend is somewhat similar to those of previously plotted curves for minority students (Figs. 7 and 23) but the peak performance is displaced toward the teachers with less experience. Considering the paucity of the data for the present plot, this difference can probably be considered minor.

The plot of minority student performance vs. teacher's age (Fig. 34) is similar to the plot of overall student performance vs. teacher's age (Fig. 29) but the peaks are displaced toward the younger end. Also, the fall-off in performance with increasing teacher's age is much more severe. This trend is more or less like the previously observed trends for minority students (Figs. 13 and 25) in which performance reaches a peak at Teacher's age 30 to 35, stays more or less steady until age 55 or 60, and then falls off. The only exception to this is in the plot of the 8-county data (Fig. 13) which reaches a peak at age 57-58. However, there is no intermediate data between 34 and 60 to check on the trend.

Table 7

MINORITY STUDENT PERFORMANCE vs. TEACHER CHARACTERISTICS

NOVEMBER-MARCH 1971

Teacher	Gain (Months)		Teacher Characteristics*					
	Word Mean+	Para Mean+	Exper-ience	Degree	Major	Age	Sex	Salary
A	1.00	-8.00	7	2	4	63	F	11
D	11.67	4.33	1	1	1	30	F	9
E	5.00	2.00	2	1	1	58	F	7
M	5.00	1.00	2	1	2	45	F	8
N	4.00	3.00	4	2	1	57	F	10
O	21.00	-5.00	3	2	3	48	F	10
P	4.00	5.00	1	2	2	24	F	7
Q	1.43	5.14	1	2	2	35	F	8
R	5.67	7.00	2	3	4	35	M	7
T	9.00	12.50	1	1	2	50	F	7
U	4.00	-1.00	1	2	2	23	F	7

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* See Footnotes to Table 1 for data description.

+ Stanford sub-test gain scores (November-March).

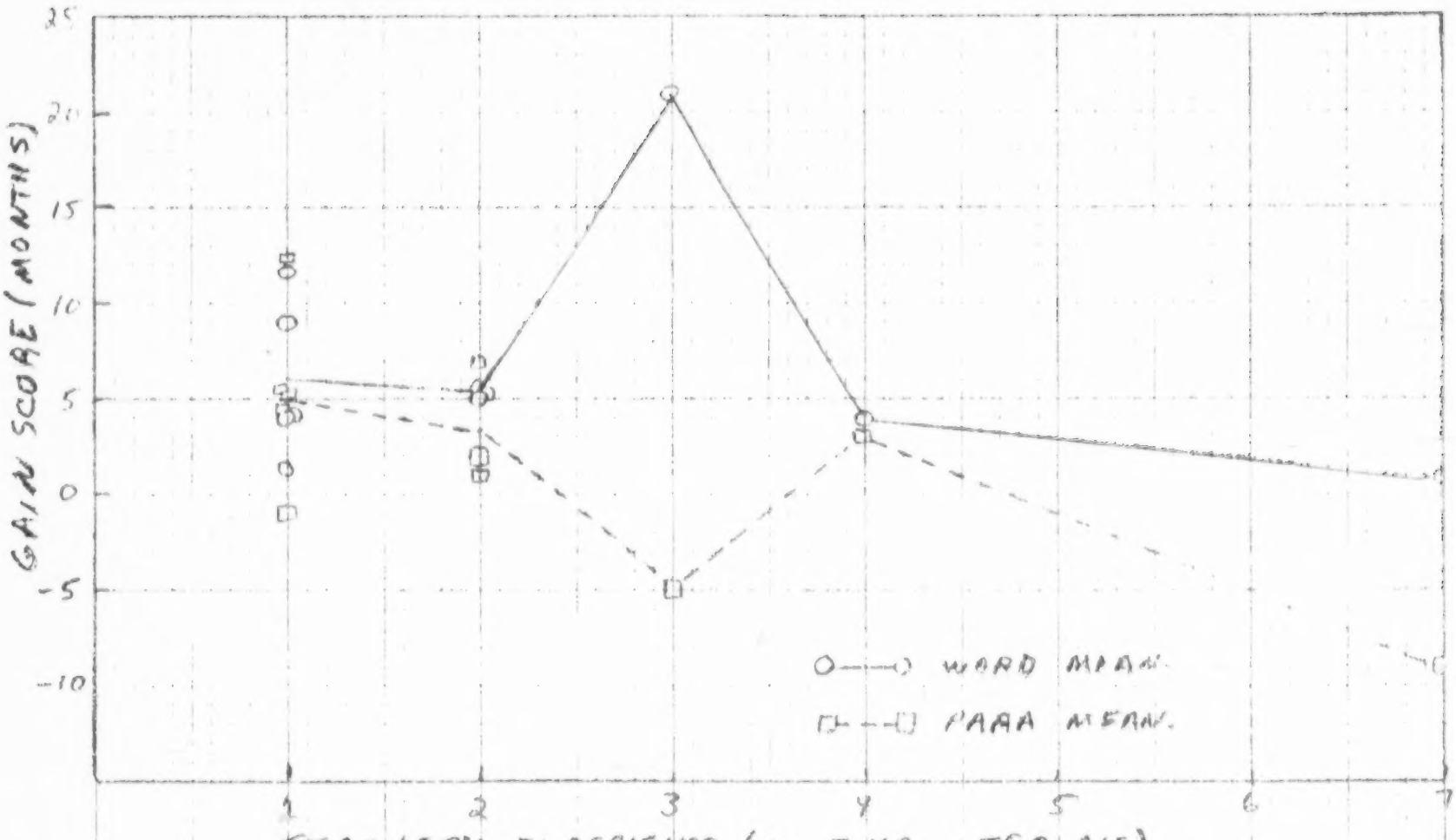

Fig. 32 ENGLISH PERFORMANCE (GAIN SCORE IN MONTHS - STANFORD ACHIEVEMENT SUB-TESTS) VS. TEACHER'S EXPERIENCE -- MINORITY STUDENTS

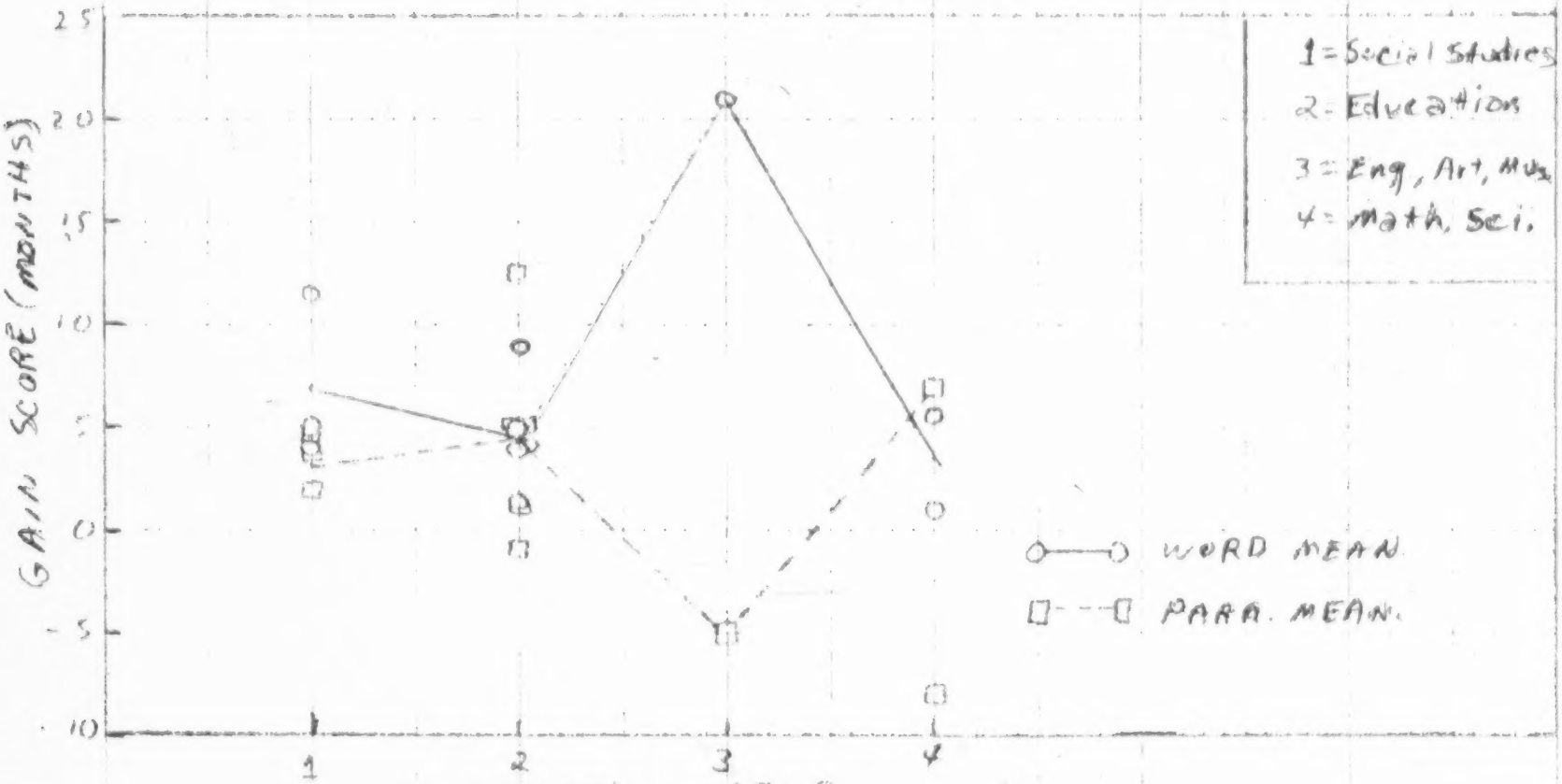

Fig. 33. ENGLISH PERFORMANCE (GAIN SCORE IN MONTHS - STANFORD ACHIEVEMENT SUB-TESTS) VS. TEACHER'S MAJOR --MINORITY STUDENTS

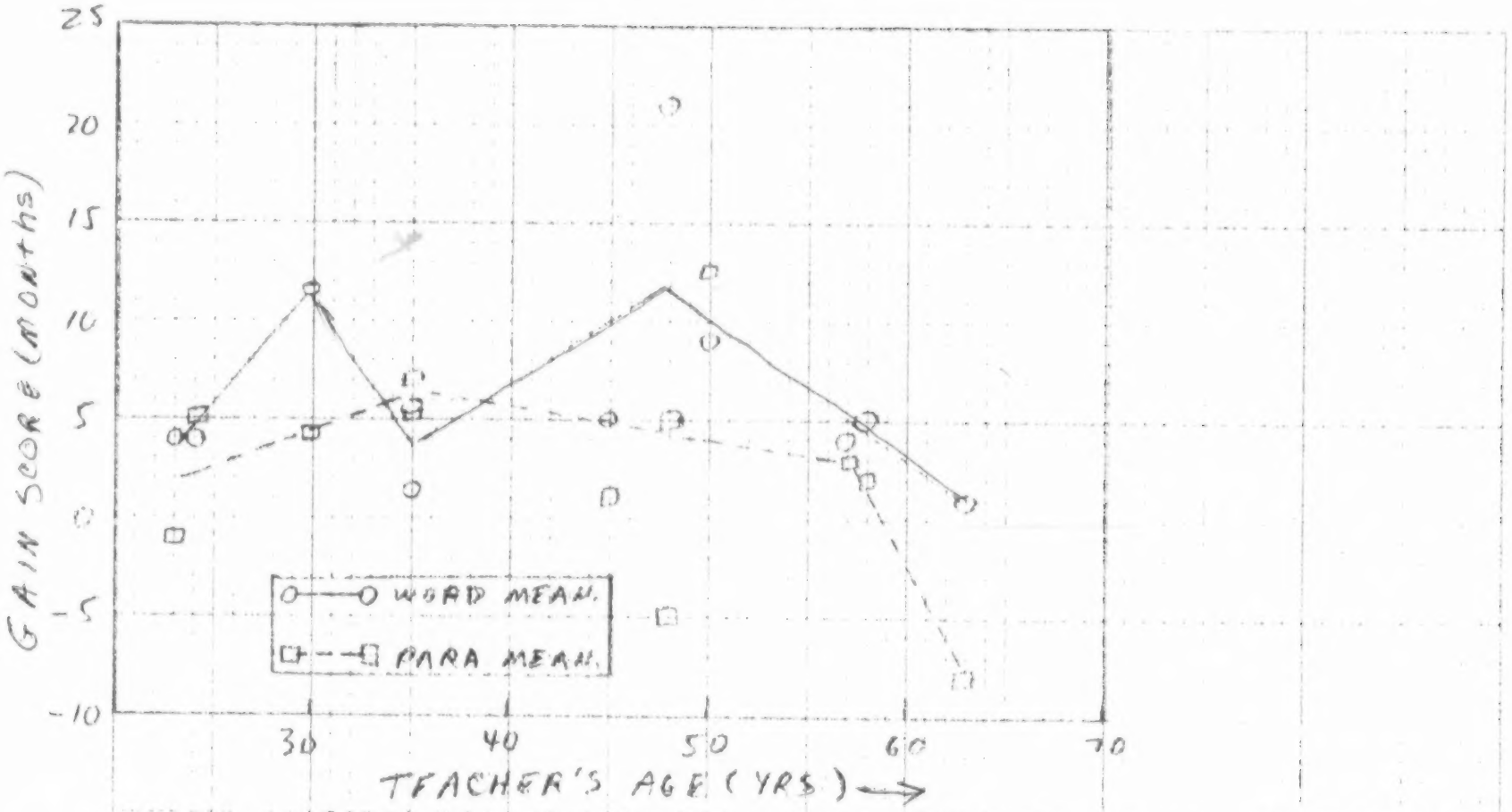

Fig. 34. ENGLISH PERFORMANCE (GAIN SCORE IN MONTHS — STANFORD ACHIEVEMENT SUB-TESTS) VS. TEACHER'S AGE — MINORITY STUDENTS

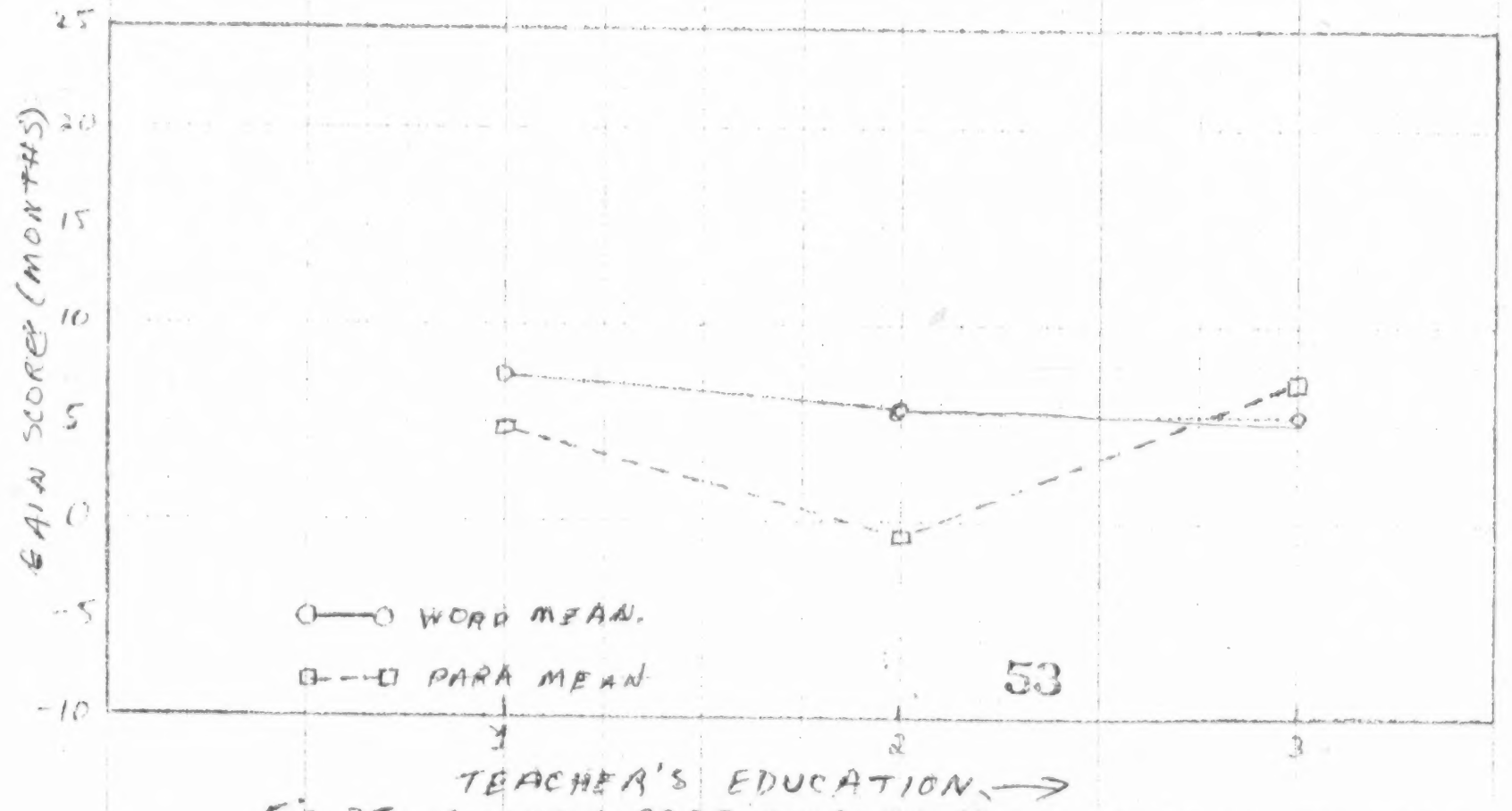

Fig. 35. ENGLISH PERFORMANCE (GAIN SCORE IN MONTHS — STANFORD ACHIEVEMENT SUB-TESTS) VS. TEACHER'S EDUCATION — MINORITY STUDENTS

The trends for minority student performance vs. teacher's major shows an overall increase with increasing "hardness" of major. This is in agreement with the trend observed for these groups overall (Fig. 28). This also agrees with the previous observations for minorities in the 8-county data (Fig. 10), but not with the observations of minority students using Spring 1970 achievement test data (Fig. 24).

Figure 35 shows the trends for minority student performance as a function of teacher's education. In this case the performance decreases with increasing education for word meaning but for paragraph meaning the performance decreases and then increases, reaching a peak at the highest education level. This trend runs counter (for word meaning, at least) to the trend observed for the overall group of students (Fig. 30). This trend is also not in agreement with the sharp increase in performance with teacher's observed with the Spring 1970 achievement scores for minority students (Fig. 26). Also, this performance vs. education trend does not agree with the observed English performance for minorities with the 8-county data (Fig. 16), although it is more or less in agreement with the observed trend for overall minority performance with that data (Fig. 17).

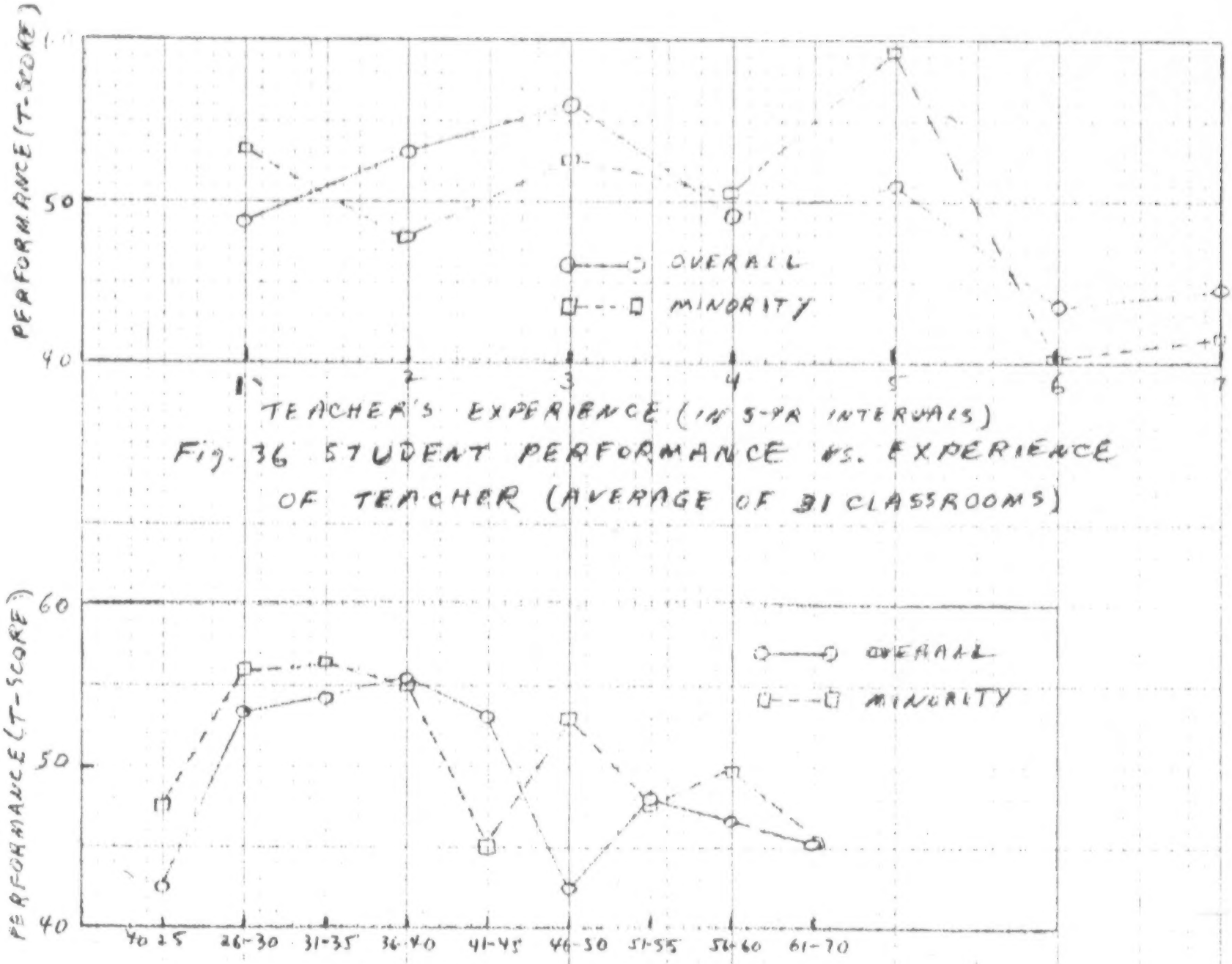

Fig. 36 STUDENT PERFORMANCE VS. EXPERIENCE OF TEACHER (AVERAGE OF 31 CLASSROOMS)

Fig. 37 STUDENT PERFORMANCE VS. AGE OF TEACHER (AVERAGE OF 31 CLASSROOMS)

Fig. 38 STUDENT PERFORMANCE VS. SALARY OF TEACHER (AVERAGE OF 31 CLASSROOMS)

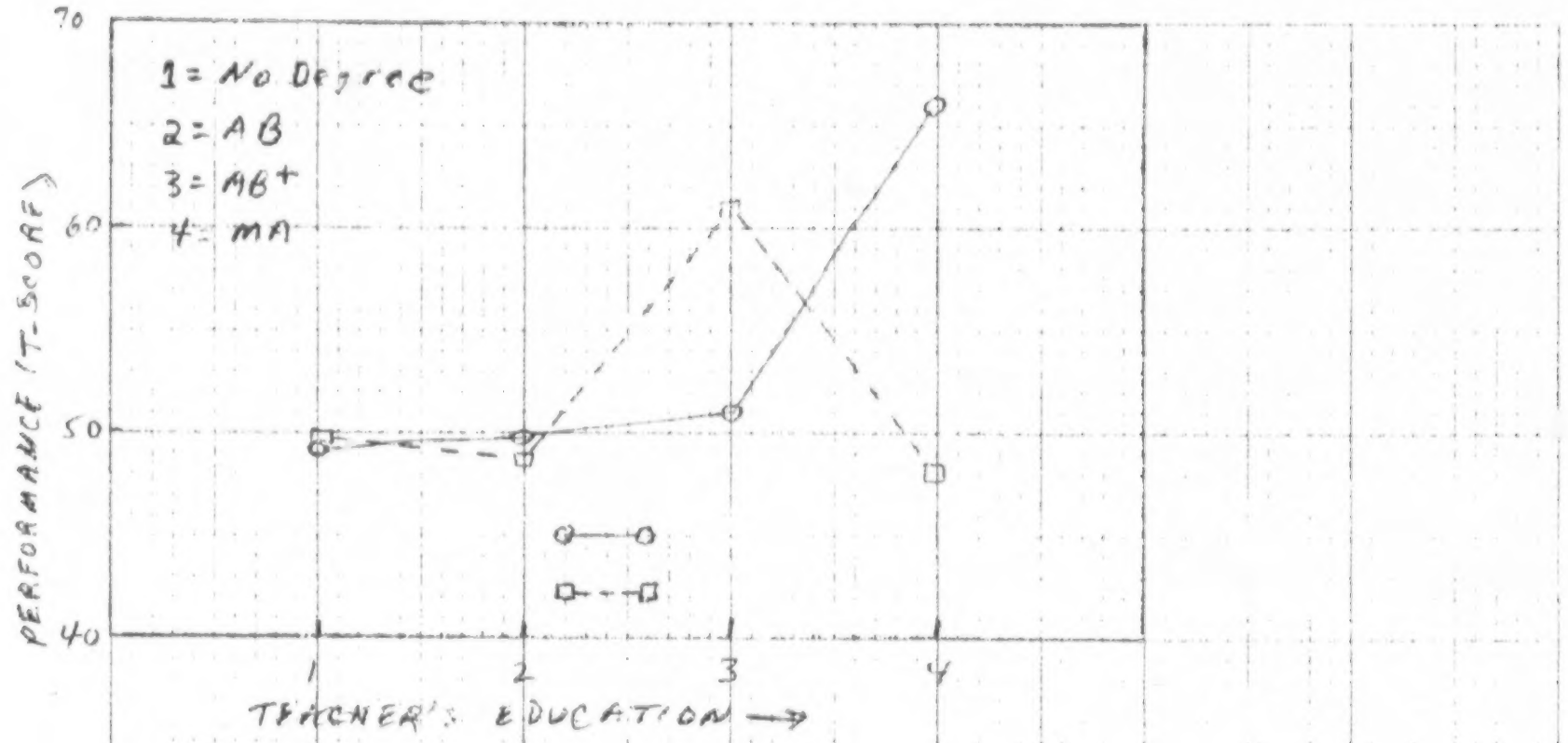

Fig. 39 STUDENT PERFORMANCE VS. EDUCATION OF TEACHER (AVERAGE OF 31 CLASSROOMS)

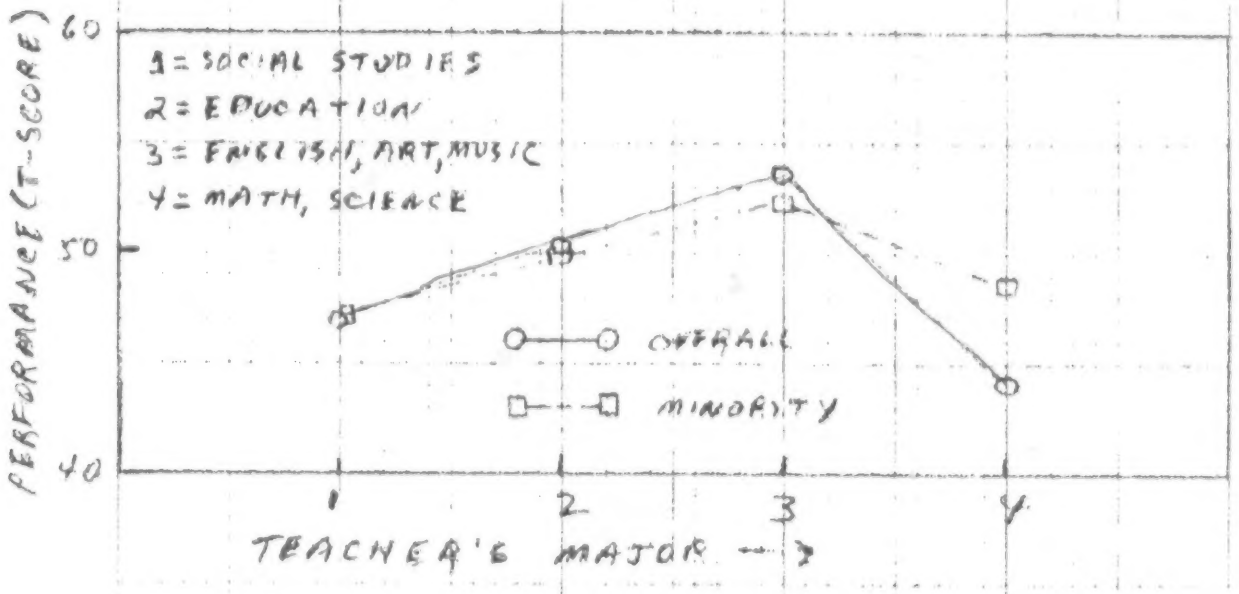

Fig 40. STUDENT PERFORMANCE VS. TEACHER'S MAJOR (AVERAGE OF 31 CLASSROOMS)

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OVERALL TRENDS

The three sets of data involved in this study show a reasonable amount of consistency from group to group, regardless of the measure used. If we combine the data from Tables 1 through 7 by transforming the means for each classroom group into a standard score, such as a T-score[9], we can then calculate mean performances across all groups of students as a function of teacher characteristics. These calculations have been made for all student data listed in the preceding tables including data for the minority students. The results are plotted in the Figures that follow (Figs. 36 to 40).

Examining these figures reveals the same overall trends discussed previously. Overall Student performance reaches a peak for teachers of 5 to 10 years experience (Fig. 36), for teachers of 36 to 40 years of age (Fig. 37) and with salaries of $8,000/year (Fig. 38). Student performance increases with education of the teacher (Fig. 39) reaching a peak for teachers with Masters degrees. The peak performance also occurs with teachers with majors in English, Music and Art, and drops rapidly for teachers with "harder" majors such as Mathematics or Science.

For minority students, the peak performances usually occur at different positions. For teacher's experience (Fig. 36) the peak occurs for teachers with 20 to 25 years experience with a lesser peak at 5 to 10 years experience (where the students overall do the best). The peak performance as a function of age (Fig. 37) occurs at 31 to 35 years, earlier than for the students overall. Secondary peaks occur for 46 to 50 and 56 to 60-year old teachers. Again, peak performance occurs for teachers with $8,000/year salaries and then falls off.

---

[9] Garrett, Henry E., Statistics in Psychology and Education (New York: David McKay Company, pp. 314-318).

This is contrary to the trend for students overall. Student performance reaches a peak for teachers with English, Music or Art degree majors and then falls off for teachers with Math, Science and other majors. This drop is less severe than for the students overall, but it does drop. The previous observation (p. 5) that teachers with mathematics or science training may be more successful with minority students than with students overall apparantly still holds true. However, from the overall point of view they are not as successful as teachers trained in English, Art or Music. The performance measure used for the data plotted in Figs. 36 to 40 was for the most part English performance. The measure used for the 8-county data was overall performance, heavily weighted with English performance measures. Therefore, it should be no surprise that teachers heavily trained in English influence students performance the most.

In conclusion, then, this study shows that the best performance for elementary school students overall (through grade five) is obtained by teachers with 5 to 10 years experience; who are around 40 years of age; who receive $8,000/year compensation; who have training through the master's degree; and who have majored in English, Art or Music (but not Math or Science).

On the other hand, the best performance for minority students is obtained by teachers with 20 to 25 years experience; who are around 30 years of age; who receive $8,000/year compensation; who have training beyond the bachelor's (but not Master's training) and who have majored in English, Art or Music (but a major in Math or Science is not as detrimental as for the students overall).

APPENDIX A

Example of Computer Graphing

Fifth Grade Data

The Western Nevada Regional Education Center has developed a computer graphing capability utilizing the input data in the format used in the WN-REC Student Information System. This graphing capability has the additional advantage of utilizing the blank spaces in the five input cards (A, B, C, S, R data cards of the WN-REC System) for storage of additional temporary data, such as grades, teacher characteristics, fiscal data, etc. Once this data is submitted in the appropriate format for a collection of students, then means of various student characteristics: such a Grade Point averages, Parents' occupations, days absent, schools attended, standardized test scores, innoculation record, etc., can be computed and graphed against other categories of stored data such as: age, racial extraction, teacher characteristics, fiscal allocations, etc.

This graphing program has been designed by Nevada Systems Data Processing, Bender Warehouses, Reno, Nevada and is available for use for a moderate expenditure. Some examples of the graphing system follow.

The graphs (see following pages) chosen for display are:

Teacher's Experience (EXPR) vs. Mean Grade in Literature (MLTR)
Teacher's Degree Level (DEGL) vs. Mean Grade in Literature (MLTR)
Teacher's Major (MAJR) vs. Mean Grade in Literature (MLTR)

The graphs are plotted to the nearest tenth of a GPA (Grade Point averages of from 0 to 5.0). The Experience, Major and Degree Level categories are as described in Table 1 of the main report. The column heading: DATA in the printouts, is the mean performance measure for the students of the teachers in each category. Slight differences in these graphs and the results shown in Figs. 1, 2 and 3 should be expected, since the previous data for the 8-county groups of fifth graders was based on a sample of five from each classroom. The present graphs used 87 students from these same classrooms.

EXPR VS MLTR

MLTR

		0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0
DATA		0	1	2	3	4	5	6	7	8
		0	0	0	0	0	0	0	0	0
40	01	*								
43	02	*								
44	04	*								
41	05	*								
33	06	*								

EXPR

61

DEGL VS MLTR

MLTR

```
                0    0    0    0    0    0    0    0    0
                0    0    0    0    0    0    0    0    0
                0    0    0    0    0    0    0    0    0
DATA            0    1    2    3    4    5    6    7    8
                0....0....0....0....0....0....0....0....0....0....

                *
38      1       ----------------------------------------*
41      2       ------------------------------------------*
41      4       ------------------------------------------*
      ......
       DEGL
      ......
```

MAJR VS MLTR

MLTR

DATA		0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0
		0	1	2	3	4	5	6	7	8
		0	0	0	0	0	0	0	0	0
37	01	* ----------				*				
39	02	----------				----------	*			
41	03	----------				----------	----------	*		
40	04	----------				----------	----------	----------	*	

MAJR

The peak performance for this group of students occurs for a teacher with 20 to 25 yrs. experience (see EXPR vs. MLTR), with a bachelor's degree or master's degree (see DEGL vs. MLTR) and for a major in English, Art or Music (see MAJR vs. MLTR). These results are quite similar to the results shown in Figs. 1, 2 and 3.

These particular figures were chosen merely as examples of the possible printouts - others are possible.

ANALYSIS OF EXPERIMENTAL CURRICULA:

MINI CLASSES AT PERSHING COUNTY HIGH SCHOOL

FALL, 1970

Theodore G. Brough
Victor M. Hyden, Jr.
Eleanor Gottschalk

June 1, 1971

WESTERN NEVADA REGIONAL EDUCATION CENTER

220 Main Street
P. O. Box 421
Lovelock, Nevada 89419

Tel. (702) 273-2631

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ABSTRACT

The mini classes are rated highly by teachers and by students. Students generally looked forward to mini classes with high anticipation, rating the courses very high at first. Teachers generally rated the courses lower, but by the end of the course the two groups were in fairly close agreement. The factor that generally was closely associated with liking for a particular mini class was teacher-pupil planning. This one factor was further emphasized in later analysis where it usually turned out to have the highest correlation with the "like" rating for courses analyzed as: Hands-on vs. Hands off; and Boys vs. Girls, etc. Other facets of this teacher-pupil planning variable were teacher liked, materials sufficient and tests important, each contributing seriously to the ratings of the one or the other type of courses.

There are differences in the appeal of the No-hands-on vs. the Hands-on classes, the latter being preferred by students with generally disadvantaged backgrounds. Mini classes overall appeal more to minority boys who come to school by bus than to other students. For boys, emphasizing occupations and encouragement in taking the courses are important. For girls Hands-on classes are preferred but not because of emphasis on occupations.

PROJECT DEVELOPMENT

The inception of the mini-class program in Pershing County High School grew out of "an attempt to reach all students and to develop for the student a school curriculum more interesting and relevant from the students' point of view. . ."[1] From this point of departure, a year-long study of possible curricular alternatives was instituted in the Pershing County School System during the school year 1969-70. Discussions between teachers and school administrators revealed a wide range of proposed means of achieving the interest and relevance goal.[2] A mini class program similar to that at Needles, California was proposed as a possible mechanism for incorporating many of the curricular alternatives suggested. A visitation to Needles, however, resulted in PCHS not adopting that total approach.

The curriculum committee consisting of administrators, teachers and counsellors fashioned proposals for the further consideration of the faculty (and the students). A tentative goal was formulated as follows:

> "Mini classes are designed to give students an opportunity to enroll in a high interest, student-oriented class which will make school more interesting and relevant to the individual student."[3]

---

[1] Gottschalk, Eleanor Pershing County High School Mini Class Program (Lovelock: Pershing County High School, undated memorandum Fall, 1970 , part I, p. 1) (Reprinted as Appendix 1 to this report).

[2] Gottschalk, E., ibid, attachment No. 1.

[3] Gottschalk, E., ibid, Part I, p. 2.

Specific points to be emphasized within this goal structure were suggested to the staff:

1. To prepare students to fill specific local employment needs.
2. To involve private business in the educational process.
3. To eliminate unproductive instructional programs.
4. To provide sensitive and sensible teaching.
5. To select relevant material and subject matter.
6. To increase involvement in discussion and acceptance of student ideas.

With these aims in mind, teacher suggested classes were tabulated by the Mini class committee and the resultant list of proposed classes was further reviewed by the administrators, teaching staff and representatives from the State Department of Education. The final approved class structure was as follows:

1. "A mini course is to be a course offered two times per week (55 minutes a period) for 9 or 18 weeks and should be taught by an interested teacher."

2. "Most mini courses should be high interest for students and relatively few advanced courses offered."[4]

3. The courses are available to Sophomores, Juniors and Seniors with Seniors and Juniors having first priority in choices.

4. Classes suggested or elected by fewer than four students will not be offered -- the maximum class size was to be fifteen students.

Once this class structure was adopted, the student population was interviewed by having students fill out interest questionnaires. A list of proposed classes with brief descriptions of content was circulated and the students were asked to comment on the suggestions and to propose other topics for consideration. From this polling of the student body a list of high interest mini-courses was compiled for scheduling purposes. Ultimately the students were registered in twenty-one mini-courses, all students being given either their first or second choices in one or the other of the scheduled time periods (Monday-Wednesday, or Tuesday-Thursday).

---

[4] Gottschalk, Eleanor, ibid, attachment No. 3.

EVALUATION

The Western Nevada Regional Education Center became involved in evaluating the mini-classes after the classes had started. Fortunately, however, the Center was involved soon enough to get out an early interest questionnaire to students, teachers and parents, the purpose being to establish base-line data concerning interest in the new classes.

In order to evaluate the new program it became necessary to compile a list of specific goals closely related to each of the groups (students, teachers, administrators, etc.) involved in the experimental curricula. As a result of close consultation with the Pershing County School administration the following list of goals was compiled:

For Students:

A. To identify subjects of special interest.
B. To expand their knowledge of the many fields of information, skills, and work.
C. To increase their interest in the schools' curriculum.

For Teachers:

D. To experiment with and judge the successes of new teaching and learning techniques.
E. To determine the relative success of student-teacher class planning techniques.

For Administrators/Board:

F. To identify new instructional methods and related school activities which might be used in the district.

For School:

G. To identify and use new community resources (persons, organizations, facilities) in the schools' classes.

For State Department of Education:

H. To determine the feasibility of promoting the mini-class concept within the State.

In order to measure the impact of the new classes on students, teachers and parents, a series of opinion questionnaires of the semantic differential-type were compiled. The questionnaires were designed to gather opinions concerning:

I. Reasons for choosing the course.
II. Details about the structure of the courses enrolled in.
III. Interest in the short course concept by the respondent and his family, friends, and acquaintances.
IV. Details concerning the teaching emphasis in the course (techniques and resources used).

The questionnaire as originally constituted was designed to be filled out by any respondent (student, teacher, or administrator) by suitable shifts in points of view, but experience with its first administration (teachers) indicated the need for revisions when used by respondents other than students. The final revised questionnaires are included in an appendix. The questionnaire was designed to be used at the beginning (within the first two weeks) at the middle (after 9 weeks) and at the end of the semester. Slight revisions, were made in the questionnaire in the mid-term and post-term versions, but the vast majority of the questions remained virtually unchanged throughout.

The mini-class questionaire was administered during the first two weeks of school to the students enrolled in the various mini-classes, to their parents and to the teachers of the mini-classes. The responses to each question were rated from 1 to 7 (low to high) and the responses to all rating questions were averaged (36 responses). The averaged ratings for students, teachers and parents for each course are given in Table 1. In addition the overall average rating by each group is given as well as the overall rating for each group for the courses classified as Hands-on (practical, shop-type or skill courses) or as No hands-on (largely classroom or community observation and discussion) courses.

Table 1

RATINGS OF MINI-COURSES
BY STUDENTS, TEACHERS, PARENTS

Start of Term Responses

Course	Average of Ratings (all scales) Students	Teachers	Parents	Desirability of Letter Grade Stu.	Teach.	Par.	Prop. of Girls %	Future Job Certainty Students	Prop. of Seniors %
01	5.42	4.37	5.62	5.38	4.00	5.5	0	5.25	84.6
02	5.18	5.15	5.12	2.18	4.00	4.0	50.0	4.00	60.0
03	4.77	4.21	5.41	6.14	1.00	4.0	40.0	5.71	0
04	5.14	4.11	3.56	1.00	5.00	4.0	42.8	3.80	57.2
05	5.19	4.74	5.35	2.72	6.00	4.0	85.6	3.50	14.3
06	5.15	4.07	5.29	4.15	4.00	4.5	57.2	5.00	28.6
07	5.05	4.62	4.76	4.00	1.00	3.8	42.8	4.00	28.6
08	4.87	4.55	5.55	3.81	1.00	7.0	87.4	5.81	12.5
09	4.74	5.26	4.66	4.73	5.00	3.25	100.0	4.25	21.0
10*	5.25	5.15	5.05	2.73	4.00	2.5	0	4.15	42.8
11*	4.82	4.03	5.47	3.56	2.00	4.0	0	3.86	11.1
12	5.02	5.16	5.59	3.79	1.00	6.5	53.3	5.46	21.4
13*	5.06	4.46	5.45	4.40	2.00	6.0	33.3	3.92	0
14	4.98	4.76	4.30	4.45	3.00	3.2	100.0	5.27	0
15	4.90	4.12	--	3.40	4.00	--	20.0	5.50	30.0
16*	4.99	4.13	4.69	5.36	2.00	2.5	100.0	6.00	27.3
17	5.26	4.44	5.24	2.37	1.00	5.0	75.0	5.34	37.5
18*	5.41	4.48	5.30	4.55	6.00	4.3	0	4.89	77.8
19*	4.99	4.24	5.36	5.17	1.00	4.0	94.5	5.50	23.5
20*	4.93	4.18	4.87	4.33	5.00	1.0	0	6.10	42.8
21*	5.07	4.65	5.35	4.91	2.00	7.0	26.3	6.14	7.1
Overall Rating:	5.05	4.41	5.56	4.08	3.05	4.24	50.9	4.91	28.5
*Hands on Activity:	5.11	4.43	5.19	4.30	3.20	4.06	33.3	5.00	35.7
No Hands on:	4.99	4.37	5.98	3.85	2.81	4.15	69.3	4.82	20.4

NOTE: 4.0 is the neutral point on all scales
7.0 is highest, 1.0 is lowest

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The Table also includes average ratings for two specific questions: desirability of a letter grade (averages for students, teachers and parents) and future job certainty (average for students only). Other columns of information included in the Table are: proportion of girls in each class and proportion of seniors. A discussion of some of the trends revealed in Table 1 follows.

RESULTS: FIRST QUESTIONNAIRE

Table 1 reveals the following:

1. The four courses rated the highest by students (Motor Tune-up, Computer Programming, Publications, Farm Machinery) generally (3 out of 4) have the following characteristics:

   They are courses emphasizing hands-on activities.
   They have the highest proportion of Seniors.
   Generally have a low proportion of girls enrolled.
   Are highly rated by parents.

2. The four courses rated the lowest by students (How to Get a Job, Consumer Education, Good Grooming, and Welding) generally (3 out of 4) have the following characteristics:

   Usually do not involve hands-on activities.
   Usually have the lowest proportion of Seniors enrolled.
   Usually have a high proportion of girls enrolled.
   Are usually highly rated by parents.

3. Students rate the courses higher than their teachers, parents rate the courses higher than either the students or the teachers.

4. Students rate hands-on activity courses higher than no hands-on activity courses; teachers rate the two types of courses about the same; while parents rate the no-hands on courses much higher than hands-on activity courses.

5. Students rate the desirability of letter grades much higher than do their teachers, though the rating is close to neutral for students while being negative for teachers. Parents rate the desirability of a letter grade somewhat higher than do the students.

6. Students and teachers consider a letter grade more appropriate for the hands-on courses than for other courses, while parents view the desirability in a reverse manner: letter grades are slightly more appropriate for the non-hands-on activity courses.

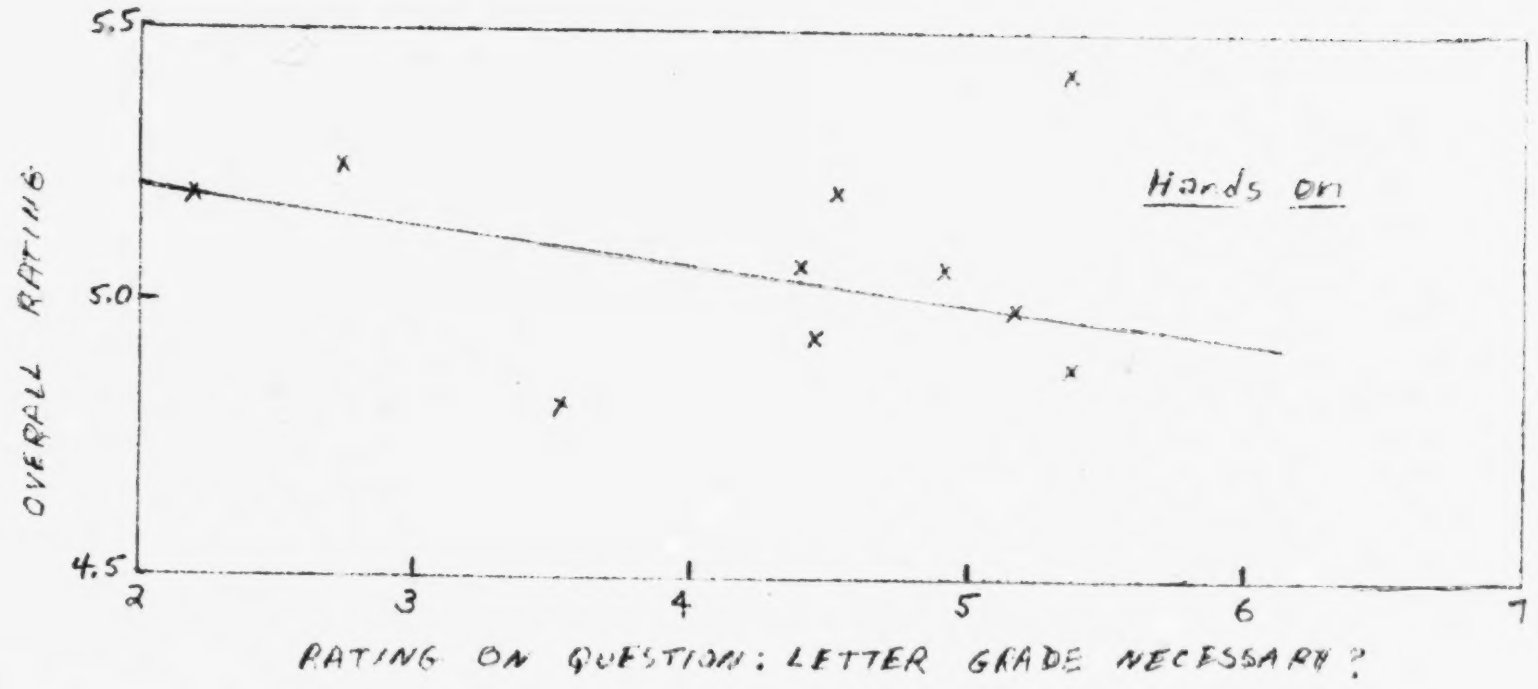
7. The lower the overall rating of a mini-course (student rating) the higher the expressed need for a letter grade. It is almost as if the letter grade was viewed as a compensation for time spent in an unpopular course (see Fig. 1).

8. For both the hands-on (10 courses) and the no-hands-on courses (11 courses) the ratings increase as the proportion of seniors enrolled increases.

9. The eleven courses classified as non-hands-on activity courses are rated by students in virtually inverse order as their self-rated future occupation certainty. For example, these eleven courses are ranked in terms of the students' job certainty as follows:

Course:	Course Rating	Students' Future Job Certainity
03	4.77	5.71
04	5.14	3.80
05	5.19	3.50
06	5.15	5.00
07	5.05	4.00
08	4.87	5.81
09	4.74	4.15
12	5.02	5.46
14	4.98	5.27
15	4.90	5.50
17	5.26	5.34

This data has been plotted in Figure 2. Only the next to the last course has a rating that does not fall close to the inverse trend of the future job certainty rating.



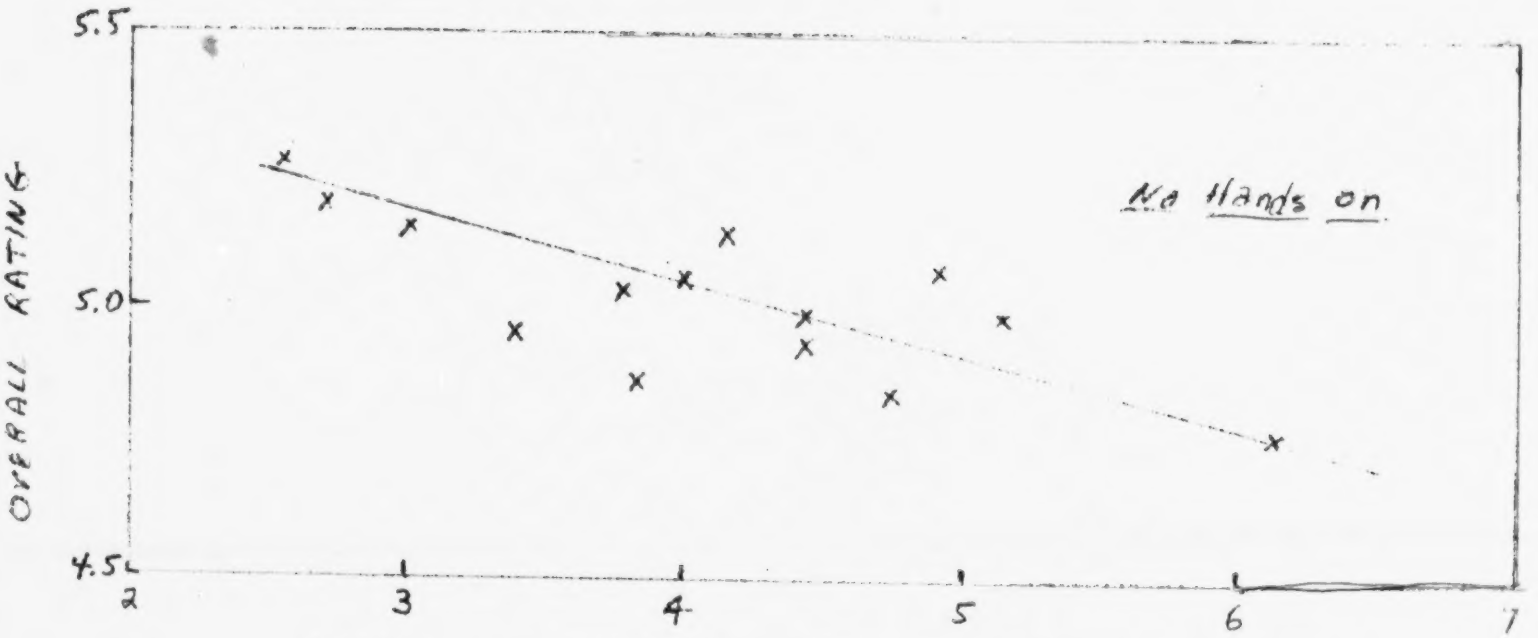
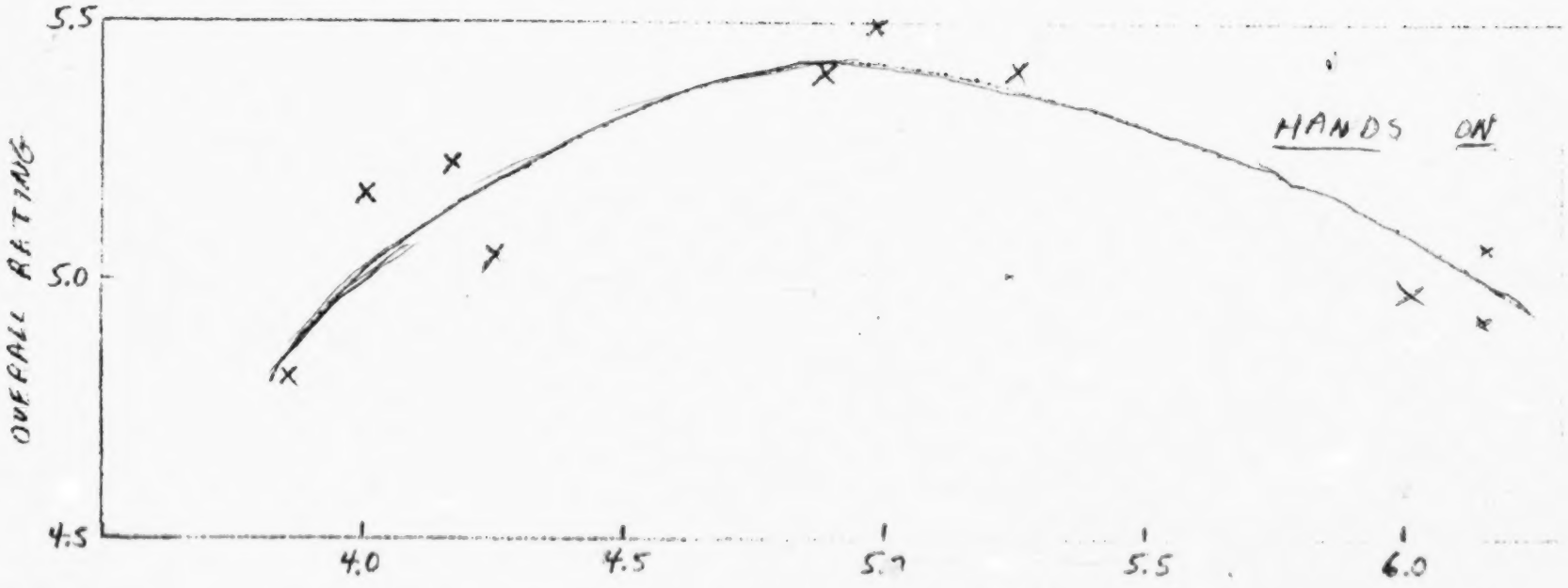


Fig. 1. STUDENT OVERALL RATING VS. DESIRE FOR LETTER GRADE



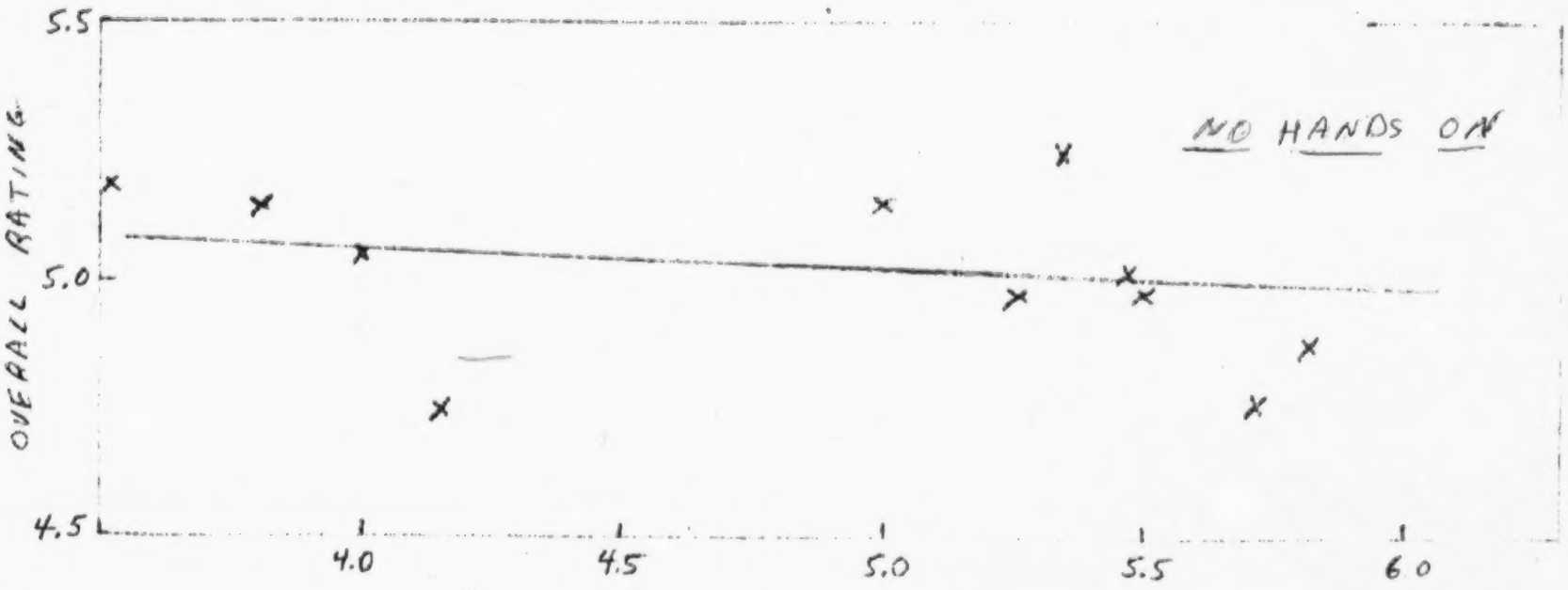


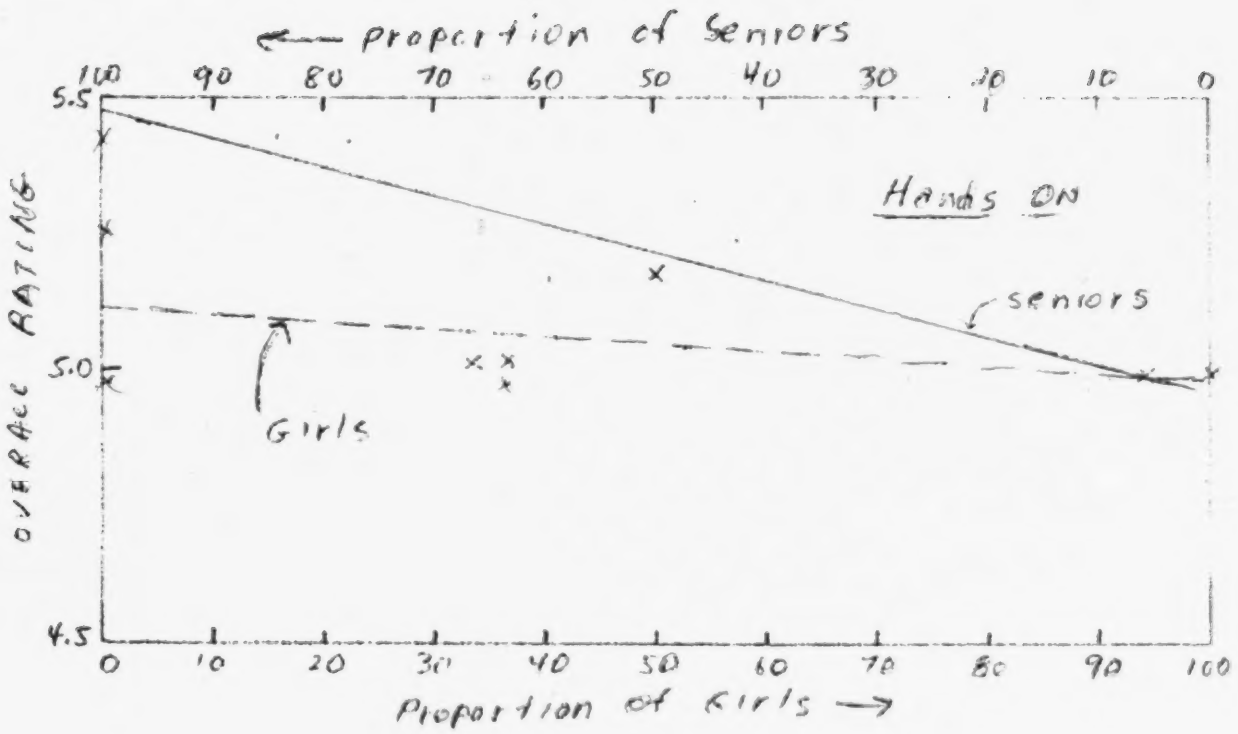
Fig. 2. STUDENT OVERALL RATING VS. CERTAINTY OF FUTURE OCCUPATION

10. A plot of the future job certainty of students vs. overall rating for students in Hands-on classes (10 classes) reveals a U-shaped distribution peaking at a job certainty of 5.0 and falling off rapidly at both ends of the curve (Fig. 2).

11. There is a slight trend toward an increasing proportion of girls enrolled in a course as the proportion of <u>seniors</u> decreases (Fig. 3). Also, for hands-on courses the overall rating of the classes increases with the proportion of seniors enrolled but decreases with the proportion of girls enrolled. For the no-hands-on courses, however, the rating increases as the proportion of <u>both</u> girls and seniors increases.

In Summary: The mini-courses rated the highest by students are those that have the highest proportion of seniors enrolled, are hands-on (practical) courses, and are those that have students with the highest future job certainty (perhaps a function of age). The <u>non</u>-hands-on activity courses rated highest by students are those with the highest proportion of seniors enrolled and with students who rate their future job placement as uncertain. The <u>hands-on</u> activity courses, however, seem to appeal more to boys than to girls.

These responses to the first administering of the questionnaire are largely anticipatory. The students, teachers and parents are trying to judge how they will like the classes and are, perhaps, viewing the classes from different points of view. However, the results do give us a base-line from which to measure <u>changes</u> in ratings among the several groups.



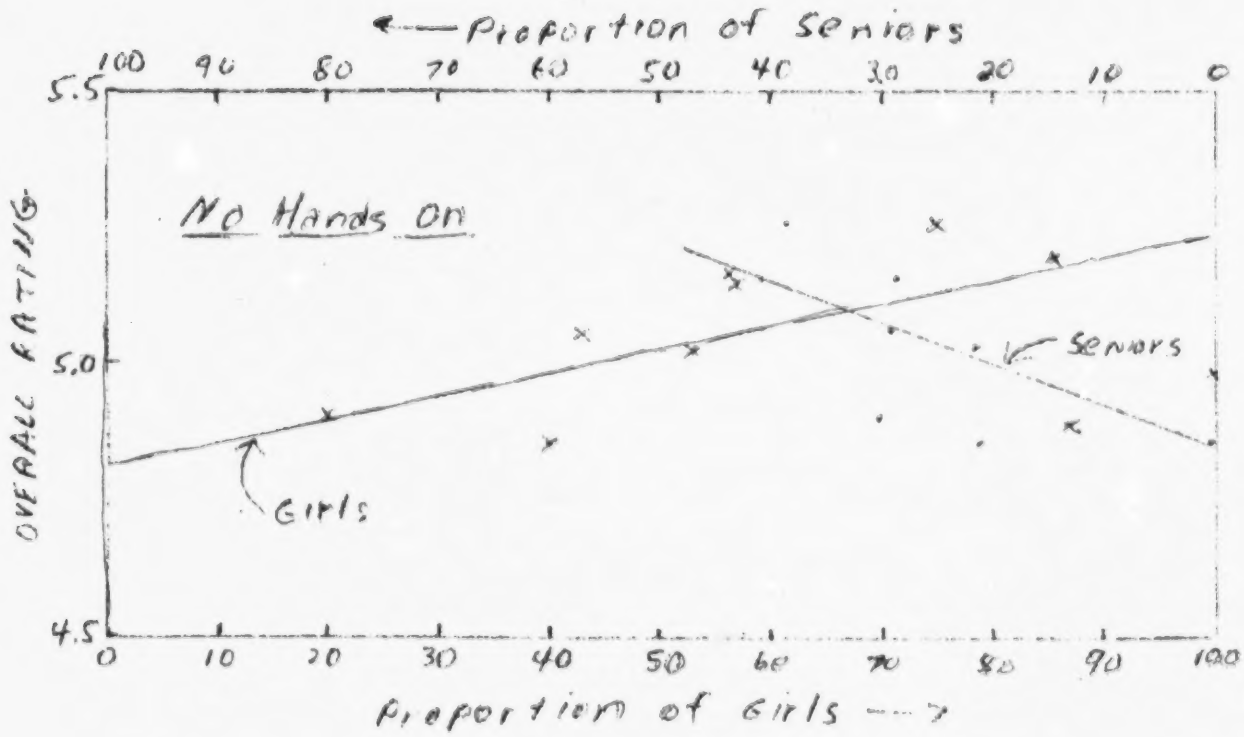


Fig. 3. STUDENT OVERALL RATING VS PROPORTION OF GIRLS AND PROPORTION OF SENIORS ENROLLED IN CLASS

RESULTS: SECOND QUESTIONNAIRE

A second administering of questionnaires (slightly revised) was made at the end of 9 weeks in the fall semester. In this case, the students and teachers only filled out the questionnaires. Some results of the second use of the questionnaire are included in Table 2. Twenty-seven of the questions were identical to questions on the first version. These 27 rating responses were averaged for each of the groups involved for each class and for each type of class (hands-on and no-hands-on).

Comparing the results obtained from the two ministerings of the questionnaire reveals a general drop in ratings by the students but essentially no change for the teachers. Analysis of individual questions (to be discussed later) does reveal some changes among the teachers, however.

RESULTS: THIRD QUESTIONNAIRE

A third ministering of the questionnaire to students and teachers at the end of the course reveals a surprising degree of unanimity among students and teachers. The students ratings (overall) have dropped further from the mid-term ratings while the teachers ratings have risen somewhat. The result is that from an overall point of view students and teachers virtually agree on their ratings of the courses: hands-on courses are rated higher than no-hands-on courses by both teachers and students, while the overall ratings of all courses are in virtual agreement for the two groups.

Table 2

OVERALL RATING OF MINI CLASSES
BY STUDENTS AND TEACHERS

Mid-Term Responses

Class	Students' Rating	Teacher's Rating
01*	4.90	4.33
02*	5.01	5.00
03	5.11	4.41
04	4.43	3.67
05	5.23	5.15
06	4.80	4.38
07	3.99	4.51
08	4.54	3.88
09	4.00	5.26
10*	4.63	4.52
11*	4.93	3.74
12	4.89	4.44
13*	4.84	4.81
14	4.53	4.89
15	4.97	3.70
16*	4.77	4.77
17	5.06	4.52
18*	4.88	3.70
19*	5.03	3.70
20*	4.60	5.22
21*	4.07	4.59
Overall Rating:	4.71	4.45
*Hands on:	4.79	4.44
No Hands on:	4.62	4.45

OVERALL RATINGS: THREE RENDERINGS OF QUESTIONNAIRE

Table 4 lists the overall ratings by students and teachers for the three ministerings of the questionnaire. The students' ratings gradually fall from an early high rating (anticipatory) and the teachers ratings rise from an early low rating (though not by very much). The result is that by the end of the course the two groups are very close to agreement on their ratings. The only serious disagreement is between students and teachers in hands-on courses where the teachers rate the courses higher.

The questionnaires contained four types of questions designed to tap attitudes concerning:

I. Reasons for choosing.
II. Structure of courses.
III. Short courses in general.
IV. Teaching of short courses.

In the final questionnaire, questions were scored on three of these areas. The average ratings for these areas are shown in Table 5. The results show fairly good agreement between students and teachers in these three areas, the best agreement being for students and teachers in the hands-on courses, and for Category IV: teaching of short courses. The greatest disagreement between students and teachers is in Category I: reasons for choosing course and in the no-hands on courses.

The average responses to some individual questions for the pre-, mid- and post-term questionnaires are given in an appendix to this report: App. 3 Pupil'/Teachers' Ratings of Selected Attitude Factors . . . (Profile Chart #2 and Chart #3). Profile Chart #1 plots the pre-, mid- and post-term responses

Table 3

OVERALL RATING OF MINI CLASSES
BY STUDENTS AND TEACHERS

End of Term Responses

Class	Student's Rating	Teacher's Rating
01*	4.81	4.74
02*	4.75	5.29
03	4.39	4.29
04	4.03	4.03
05	5.16	5.00
06	4.65	4.14
07	4.55	4.55
08	4.52	4.03
09	4.09	4.41
10*	4.37	4.63
11*	4.33	4.04
12	4.46	4.66
13*	4.55	4.88
14	4.40	4.70
15	4.92	4.22
16*	4.58	4.45
17	4.56	4.30
18*	4.77	4.19
19*	4.87	4.04
20*	4.13	5.00
21*	4.53	4.85
Overall Rating	4.48	4.50
* Hands on	4.44	4.62
No Hands on	4.33	4.40

Table 4

AVERAGE RATINGS
THREE QUESTIONNAIRES

	Pre		Mid		Post	
	Students	Teachers	Students	Teachers	Students	Teachers
Overall	5.05	4.41	4.71	4.45	4.48	4.50
Hands on	5.11	4.43	4.79	4.44	4.44	4.62
No Hands on	4.99	4.37	4.62	4.45	4.33	4.40

Table 5

AVERAGE RATINGS
FINAL QUESTIONNAIRE

	Hands-on		No Hands on		Overall	
	Students	Teachers	Students	Teachers	Students	Teachers
I. Reasons for Choosing Course: (Like Class, Like Teacher, Encouraged)	5.57	5.27	5.12	4.67	5.34	4.95
III. Short Courses in General: (Many, Variety, Good Idea)	5.52	5.47	5.64	5.19	5.57	5.32
IV. Teaching of Short Courses: (8 questions)	3.98	3.72	3.97	3.96	3.97	3.84

to (1) Like Class and (2) Teacher-Pupil Planning for students in each mini-class. This chart reveals an apparent close association between the "liking" for a class and the degree of Teacher-pupil planning involved. In fact, the response by students to the question "Like Class" is highly correlated with the overall rating of each class (=.426, p<.05). The correlation is high enough to warrant utilizing the response to this one question by each individual student as an indicator of the overall rating of the courses for each student. This Like Class measure will be utilized in further analysis of these responses.

PREDICTION EQUATIONS

The many responses to the mini-class questionnaire can be treated as clues to "success" or "failure" of a given mini-class or group of mini-classes. It would be tedious (and unreliable) to compute correlations between group responses for each question asked and some overall measure of "success" or "failure" such as overall mean response or response to like the class. However, a computer technique is available which allows us to compute correlations, multiple correlations and prediction equations (multiple regression-fits) for this mass of data. It is particularly useful when averages of groups of classes are involved. In such cases we can compare such things as:

1. Important variables contributing to "success" of the best liked classes as opposed to important variables contributing to "lack of success" in the least liked classes.

2. Important variables contributing to "success" of the classes that are hands-on classes vs. those that are no-hands-on classes.

3. Important variables contributing to "success" of the classes for boys as opposed to "success" of the classes for girls.

The three comparisons were made, the results being three sets of prediction equations for the variable "like the class", one set for each of the above comparisons.

The "best" liked and "least" liked classes were chosen on the basis of students overall ratings of each class (Table 3). In that table the 4 "best" liked classes were: 01*, 05, 15 and 19*. The 4 "least" liked classes were: 04, 09, 11, 20*. Two of the "best" liked classes were hands-on classes while only one of the "least" liked was a hands-on class. No definite split between hands-on and hands-off classes was evident in this division, although the trend is in that direction (as previously observed).

The student responses to the post-term mini-class questionnaire for these 8 classes were transferred to IBM cards and analyzed by a computer* located at the McKenzie Construction Company offices, Sparks, Nevada. Some teacher ratings were included; Teacher ratings for: Like Class, Interested, and Contact with Working People, as well as Teacher's Sex, were included in the analysis. The resultant regression equations (a "best-fit" in a least square sense) for the many variables that contribute significantly ($p<.01$) are shown in Table 6. The Table also shows the contribution to the total variability of the measured independent variable (LIKE).

These two regression equations point to the variables that contribute to a high rating on the scale "Like" for both the highest and the lowest rated classes. Only 4 variables are common to both equations: Teacher Prepared, Like Teacher, Materials Sufficient, and Friends in Course. Like Teacher was the leading variable for the highest rated classes and Abilities Important (not common to both equations) was the leading variable for the lowest rated classes. The next most important variables for both groups is: Materials Sufficient?, entering the first (High) equation as a negative (materials were insufficient) and the second (low) equation as a positive. These two contribute about the same amount to the total variance in the Like variable. The variable: Teacher Prepared enters both equations in about the same manner, being of middling importance. Friends in Course is of relatively high importance to the rating of the lowest rated classes but of relatively low importance to the highest rated classes. Family interest was of relatively high importance in the highest rated courses, but of low-

* Stepwise Linear Regression, 1130 Statistical System (1130-CA-06X) User's Manual, H20-0333-0 (White Plains, New York: IBM, Technical Publications Department, 1967), pp. 7-30.

Table 6

REGRESSION EQUATIONS FOR PREDICTING "LIKE" RATING
FOR 4 HIGHEST AND 4 LOWEST RATED-CLASSES

Multiple-Linear Regression - Beta weights for variables in the equations, percent of additional variability accounted for by the variable as the variable enters the equation ($p < .01$ for each entering variable), and the final equations.

Variable	Abbrev.	Highest Rated Classes Beta	Highest Rated Classes % Var.*	Lowest Rated Classes Beta	Lowest Rated Classes % Var.*
Teacher Prepared	(TPRP)	.37	2.4	.42	4.7
Family Interest	(FINT)	.27	5.1	--	(1.0)
Like Teacher	(LTCH)	.56	43.3	.19	3.2
Grades Necessary	(GRDS)	--	(0.6)	-.53	3.7
Non-School People	(NSCH)	--	--	-.34	2.5
Class Size	(CSZE)	--	(0.1)	.41	3.8
Material Sufficient	(MTRL)	-.10	7.1	.51	8.8
Occupations Important	(OCC)	-.13	3.2	--	--
Teacher-Pupil Planning	(TPUP)	-.43	3.3	--	(0.1)
A New Experience	(NEXP)	.19	2.8	--	--
Teacher's Age	(TAGE)	-.31	2.1	--	--
Tests Important	(TSTS)	.30	5.1	--	(0.3)
Encouraged in Taking	(ENCR)	-.17	2.2	--	--
Friends in Course	(FRND)	.16	(1.4)	.47	5.8
Abilities Important	(ABIL)	--	(0.1)	.09	36.2
Like 2-Day Classes	(L2DY)	--	(0.3)	-.17	6.7
Pupil Age	(PAGE)	--	--	-.32	3.0
Library Work Important	(LIB)	--	--	.22	3.3
Resources Sufficient	(RES)	--	--	-.45	3.3
Teacher's Sex	(TSEX)	--	--	.22	3.4
Constant		5.83		13.25	

* Additional variance in the dependent variable accounted for by inclusion in the regression equation.

Regression Equations:

High: LIKE = 5.83 + [.37TPRP] + .27FINT + [.56LTCH] + [.10MTRL] - .13 OCC -.43TPUP
+.19NEXP -.31TAGE -.30TSTS -.17ENCR + (.16FRND)

Low: LIKE = 13.25 + [.42TPRP] + [.19LTCH] + [.51MTRL] + [.47FRND]
-.53GRDS -.34NSCH +.41CSZE +.09ABIL -.17L2DY
-.32PAGE +.22LIB -.45RES +.22TSEX

The prediction equation for "high" accounts for 77.6% of the variance in the "Like" rating, while that for "Low" accounts for 86.4% of that variance. The overall confidence for the equations is: $p \sim .10$.

Circled items in the equations account for less than 2% of the variance in "Like" and can be dropped from the equation. The items in rectangles are common to both equations.

interest (but significant) in the lowest rated courses. Grades were considered not important by the lowest rated classes. Other variables that lowered the ratings for the lowest rated classes were: Like 2-day classes (they apparently didn't like them) and Resources Sufficient (apparently they were insufficient). Other variables that contributed to a high rating among the low-rated courses were: class size, pupil age and teacher's sex (the males are preferred).

Variables that effect the ratings in a negative manner among the highest rated classes were: Occupations Important, Teacher-Pupil Planning, Teacher's Age, Tests Important, Encouraged in Taking. If students rated these low, the result would be a much higher "like" rating than if they rated them high. Hence, the negative coefficients indicate a general rejection of these items. A variable that contributes positively to the "Like" ratings was: A New Experience.

In general, the students that rated their classes highest judged the classes to be liked because of congruency with the original reasons for choosing the course (opinions in Category I described previously) and were slightly critical of short comings in the teaching emphasis in the class. Students who rated their classes lowest were generally more critical of the short comings in teaching emphasis (as revealed by value of Beta coefficients for each entering variable) while more emphatic about their reasons for enrolling.

On balance, the expectations of the students in the highest rated classes were met, while those of the lowest rated classes were not. The course structure and the interest (or lack of) in the short course concept were not important variables (with certain exceptions) in predicting the rating of

the course. The teacher and classroom technique variables: Teacher Prepared, Like Teacher, Teacher-Age, Tests Important, Abilities Important, etc. are the major cluster of prediction variables accounting for approximately 65%* of the variability among the like ratings for both groups. Instituting changes in classroom strategy to meet the expectations of students such as: adding materials and resources and dropping tests and grades, might be a wise policy. Other changes might become apparent upon closer examination of concepts such as: Pupil-Teacher Planning (a negative for highly rated courses), and abilities important (a positive for low rated courses).

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* This value is a relative one. Correcting for inflation may cut the total contribution to one-half this. Multiple correlations are in general too high when many variables are used.

STUDENT INFORMATION SYSTEM
BACKGROUND VARIABLES AND MINI-CLASS QUESTIONNAIRE VARIABLES

The three administerings of the Mini-course questionnaires were designed to detect changes in ratings by each student group throughout the semester. These questionnaires were administered anonymously so as to mask individual identities. However, to detect changes among individuals of differing family backgrounds it was necessary to match individual responses on each ministering of the questionnaire with the proper student. This was done through the use of key questions such as: age of student, class year of student, sex of student. These questions along with handwriting analysis allowed one to match sets of questionnaires for many students in each course. In addition, in the final administering of the questionnaire, family backgrounds were to be gathered on each student utilizing an anonymously administered set of Student Information System Questionnaires (see Appendix 4). However, these questionnaires were not administered, but a question (birthdate) was inserted so as to connect the questionnaires with the SIS forms already filled out in previous Pilot studies conducted by WN-REC. The students who had filled out these forms were Sophomores (Freshmen in 1970). These two sets of data were matched successfully for 55 students.

Of the 28 questions in the Post-term Mini-class questionnaire, 9 were chosen for further analysis along with two questions from the Pre-term questionnaire (First Choice and Confidence in Future Occupation). Added to this set of responses were 10 items from the student background information already collected for these students (from Forms A,B,C of the SIS), 2 items of student performance (Paragraph Meaning and Arithmetic Computation Stanford Achievement sub-scores-test taken in the Fall of the 9th grade year) and

selected teacher characteristics: experience, age and sex, taken from the State Department of Education printout: Certified Teachers, December 23, 1970. These 27 variables were re-coded for analysis on the McKenzie IBM 1130 computer and a Step-Wise Linear Regression Analysis performed. Because two of the variables were not scalable (Ethnic Group and Lunch Type), a binary code (Yes = 1, No = 0) was entered for each racial and lunch category, resulting in 2 computer variables for each of these non-scalable ones. The final "dummy" variables representing these non-scalable variables can be treated as true scales and correlations computed.* The binary codes used for these and other recoded items are listed in Table 7. Other scales used are scored either 7 high to 1 low, 5 high to 1 low (occupations) or 3 high to 0 low (number of learning limitations).

The results of calculating Pearson Product Moment correlations between the variable "Like Course" (LIKE) and each of the other variables discussed for each of the groupings: Hands-on Courses, No Hands-on Courses, All Courses, Boys and Girls, are compiled in Table 8. Only a few of these variables are significant when considered as individual correlations. Teacher-Pupil Planning, Father's Occupation and Real Father are significantly correlated ($p < .10$ or better) for most of the groups with Teacher-Pupil Planning the one variable with consistently high correlations.

Table 9 lists the Beta weights for items that appear in final regression equations (each item enters significantly at $p < .05$). The circled items contribute 2 per cent or less of the total variability and hence could be dropped with little loss of predictive accuracy. Table 10 contains the final regression equations for these five prediction cases. The terms that are common to four out of five of the equations are enclosed in rectangles.

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* Draper, N. R. and H. Smith, Applied Regression Analysis (New York: John Wiley, 1966), pp. 134-142

Table 7

BINARY CODING FOR NON-SCALED ITEMS

Hands on? (HANDS)	0 = Hands off, 1 = Hands on
Student Sex (SEX)	0 = Boy, 1 = Girl
Foreign Language? (LANG)	0 = English, 1 = Foreign
Transported to School? (TRNS)	0 = Walk, Bike; Family Car, Own Car 1 = Ride Bus, Other
Real Father? (RPAR)	0 = Yes, 1 = No
Missing Parent? (MPAR)	0 = No, 1 = Yes
Ethnic Group (ETH1, ETH2)	00 = White; 01 = Oriental; 11 = Spanish; 10 = Indian
Lunch type (LNCH1, LNCH2)	00 = None; 01 = Sack, Box; 11 = Hot; 10 = Other
Teacher's Sex (TSEX)	0 = Male, 1 = Female

Table 8

CORRELATIONS BETWEEN VARIABLES

Independent Variable	Performance Measure: LIKE Hands on	LIKE No Hands on	LIKE All	LIKE Boys	LIKE Girls
Teacher Pupil Planning (TPUP)	.29*	.59***	.53***	.65***	.48***
Good Idea? (GOOD)	.57***	.093	.21	.32*	.23
Occupations Important? (OCC)	.16	-.071	.034	-.13	.073
Practical Experience Imp.? (PEXP)	.040	.065	.075	.30	.005
Grades Important? (GRDE)	.12	-.074	-.004	.12	-.021
Encouraged? (ENC)	-.16	-.16	-.12	-.20	-.13
Hands on Course? (HNDS)	--	--	.21*	.062	.26*
Teacher Likes Course? (TLIK)	-.053	.15	.069	.088	.12
Non-School People Imp.? (NSCH)	-.014	-.24*	-.19	.088	-.30*
Confidence in Fut. Occ.? (CONF)	-.12	.087	.04	-.24	.15
First Choice? (FRST)	.23	.089	.10	-.009	.13
Student Sex (SEX)	.24	-.082	-.088	--	--
Father's Occupation? (FOCC)	.54***	.13	.23*	.088	.31*
Real Father? (RPAR)	.044	-.27*	-.23	.29*	-.38**
Missing Parent? (MPAR)	-.30	-.12	-.17	-.072	-.28*
For. Language at Home? (LANG)	.076	-.10	-.007	.033	-.057
Transported to School? (TRNS)	.31*	.052	.11	.43**	.010
Ethnic Group (ETH 1)	.084	-.16	-.15	-.12	-.17
(ETH 2)	.086	.080	-.001	.062	-.056
Learning Limitation? (LLIM)	.025	-.10	-.005	-.022	-.036
Lunch Type (LNCH 1)	0	-.009	.023	-.20	.16
(LNCH 2)	-.083	-.19	-.12	.21	-.46***
Paragraph Meaning, 9th+ (PA9)	-.22	-.15	-.14	-.12	-.19
Arithmetic Comp., 9th+ (AR9)	.098	-.23*	-.15	-.064	-.19
Time to School (TIME)	.20	-.048	-.051	.27	-.11
Teacher's Experience++ (TEXP)	.022	-.15	-.043	-.26	.023
Teacher's Age (TAGE)	-.092	-.066	-.098	-.35*	-.015
Teacher's Sex (TSEX)	.17	.024	.068	.19	.020

* Sign at $p < .10$

** Sign at $p < .05$

*** Sign at $p < .01$

+ PA9 = Stanford Achievement Sub-Test Paragraph Meaning taken in Fall of 9th grade, recorded in SIS files.
AR = Stanford Achievement Sub-Test Arithmetic Computation taken in Fall of 9th grade, recorded in SIS Files.

++ Teacher's experience is in five year intervals, indicated from 1 to 7 in the data.

Table 9

BETA WEIGHTS FOR REGRESSION EQUATIONS
FOR PREDICTING "LIKE" RATING
SOPHOMORE STUDENTS

(Multiple-Linear Regression-Beta weights for variables in the Regression Equations and percent of additional variability accounted for as the variable enters the equation, $p < .05$.)

Variable	Hands On		No Hands On		All		Boys		Girls	
	Beta	% Var.	Beta	% Var.	Beta	% Var.	Beta	% Var.	Beta	% Var
TSEX	-.34	3.1	.15	2.6	.24	(0.9)				
TPUP	.44	5.8	.44	34.4	.49	28.3	.99	12.7	.35	23.4
GOOD	.12	32.1							-.26	(1.0)
TLIK	-.82	5.8					-.55	4.5	.21	(1.5)
CONF	-.15	6.3	.14	3.0	.05	(1.4)				
FRST	.35	3.6							.19	2.6
FOCC	.96	16.8			.18	(1.3)				
RPAR	.66	7.2	-.59	9.1	-.18	5.5	.92	4.0	-.42	16.1
LANG	.92	7.5	-.38	3.1	-.63	(-0.9)			-.26	3.5
LNCH2	-.19	2.7								
PEXP			.71	(2.0)	.46	(1.9)	.82	3.6	.52	4.1
NSCH			-.65	4.5	-.22	2.5	-.63	(1.7)	-.29	3.2
ETH 1			-.06	4.2	-.01	3.5	-.40	4.2	.30	3.2
LLIM			-.32	2.6	-.54	(1.9)			.42	2.2
LNCH 1			-.83	2.6	-.51	(1.1)	-.07	3.1	-.50	4.1
LNCH 2			-.58	5.3	-.56	(1.8)	-.60	12.7	-.81	5.8
PA 9			.21	(1.3)	-.06	3.1				
AR 9			-.23	6.0	-.40	2.5				
TIME			-.23	(1.8)	-.64	(1.0)			-.27	3.4
TAGE			-.38	5.9	-.03	2.1			-.32	2.3
SEX					-.31	4.5				
TRNS					.64	3.5				
ETH 2					.49	4.3	-.82	3.9		
OCC							.46	6.1		
ENC							.22	2.4		
HNDS									.24	(1.7)
Constant:	2.39		13.76		9.87		-2.04		12.28	

Table 10

FINAL REGRESSION EQUATIONS FOR PREDICTING "LIKE" RATING
UTILIZING VARIABLES AND BETA WEIGHTS SHOWN IN TABLE 9

LIKE (HANDS ON) = 2.39 -.34 TSEX +.44 TPUP +.12 GOOD -.82 TLIK
-.15 CONF +.35 FRST +.96 FOCC +.66 RPAR +.92 LANG
-.19 LNCH2

LIKE (NO HANDS ON) = 13.76 +.15 TSEX +.44 TPUP
+.14 CONF -.59 RPAR -.38 LANG
+.71 PEXP -.65 NSCH -.06 ETH 1
-.32 LLIM -.83 LNCH 1 -.58 LNCH 2 +.21PA9 -.23AR9
-.23 TIME -.38 TAGE

LIKE (ALL) = 9.87 +.24 TSEX +.49 TPUP
+.05 CONF +.18 FOCC -.18 RPAR -.63 LANG
+.46 PEXP -.22 NSCH -.01 ETH 1 +.49 ETH 2
-.54 LLIM -.51 LNCH 1 -.56 LNCH 2 -.06 PA9 -.40 AR9
-.64 TIME -.03 TAGE -.31 SEX +.64 TRNS

LIKE (BOYS) = -2.04 +.99 TPUP -.55 TLIK
+.92 RPAR
+.82 PEXP -.63 NSCH -.40 ETH 1 -.82 ETH 2
-.07 LNCH 1 -.60 LNCH 2
+.46 OCC
+.22 ENC

LIKE (GIRLS) = 12.28 +.35TPUP -.26 GOOD +.21 TLIK
+.19 FRST -.42 RPAR -.26 LANG
+.52 PEXP -.29 NSCH +.30 ETH 1
+.42 LLIM -.50 LNCH 1 -.81 LNCH 2
-.27 TIME -.32 TAGE
+.24 HNDS

Circled items contribute 2 per cent or less to the variance in "Like" and can be dropped from the equation.

Items in Rectangles are common to 4 out of 5 of the equations.

These equations account for: 91.9, 78.4, 70.7, 93.8, and 78.0%, respectively of the variability in the "like" measure. However, because of inflation in a multiple correlation calculation, the total variability accounted for is more like 35 to 45% in these cases.

The equations in Table 10 and the data in Table 9 show some interesting relationships. For example, Teacher-Pupil Planning is an important variable for all groups, usually contributing the most to the overall variability in the "like" rating. Only in the Hands-on courses is the contribution less than first or second in importance. The Hands-on courses are preferred by students with step-parents or foster parents and by students who speak a foreign language at home. The No-Hands-on courses are preferred by students with real parents and who speak English only at home. Arithmetic placement, ethnicity (being Spanish or Indian) and the number of learning limitations contribute negatively (a lower "like" rating) among students in the No-hands-on courses. These factors do not show up among the Hands-on courses although they do appear in this same manner in the equations predicting ratings overall (although contributing less to the overall variance). An interesting variable of high importance to predicting ratings in Hands-on courses is father's occupation, the higher the father's occupation level (toward professional) the higher the Hands-on courses are rated. This factor does not appear at all among the No-hands-on courses and is barely represented (but in the opposite direction) for the overall group. The factor confidence in future occupation appears negatively for the Hands-on courses and positively for the No-Hands-on courses.

Among Sophomores, Hands-on courses appeal to students as follows: The courses are rated highest by those who have step or foster parents, speak a foreign language at home, have fathers with occupations at the skilled level or above, have neither a hot or a sack lunch, who judge pupil-teacher planning to be sufficient, do not have confidence in their future occupations and who get their first choice in mini-classes. Their ratings of the course are lessened by the presence of female teachers and their judgment of liking or disliking the teacher.

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No-Hands-On courses, on the other hand appeal to students as follows: The courses are rated highest by those students with real parents, by those who speak English only at home, by students who are White or Oriental, by those who have either no lunch or a sack lunch, who score highest in English and lowest in Arithmetic, who have confidence in their future occupations and who have the fewest learning limitations. The students in the No-Hands-On courses feel that pupil planning was sufficient and react positively to female teachers. They do not consider non-school people important in the classes but do want practical experience; increased distance (time) from school decreases the rating of the courses as does increasing teacher's age.

In examining the rating of the courses overall, we find that the appeal of the Mini-courses follows much like that of the No-Hands-On courses, with the following exceptions. The Mini-courses, in general, appeal more to boys than to girls, to Spanish and Orientals than to others and to those who are transported to school by bus. The coefficients for the contributing factors are most similar to those for the No-Hands-On courses, with the exception of the contribution of English (PA9). Here, the student who does less well in Paragraph Meaning rates Mini-courses higher than do other students.

Boys vs. Girls

Sophomore boys and girls react somewhat similarly to the courses. The courses appeal least to those who have hot or sack lunches. They consider Pupil-Teacher planning sufficient (and important), feel practical experience to be important, and feel the presence of non-school people unimportant. The courses appeal most to the Indian and White boys and Spanish and Indian girls and least to others. The boys differ from the girls in response to teachers (girls like teachers), and in the effect of having a step or foster parent

(the girls rate the courses lower if one or more of the parents is step- or foster) while such boys rate the courses higher. Other factors which affect the students differently are: for boys - emphasizing occupations is important, encouragement in taking a particular course is important; for girls - Hands-On courses are preferred, a class which was first choice is important, speaking a foreign language at home tends to lower the rating, increasing distance (time) from school lowers the "like" rating as does increasing age of teacher.

Some of these factors are of more importance than others, but each contributes independently to the prediction equation at a significant level, and hence is of some importance. The presence of several factors, each contributing a small amount to the variance is an annoyance, but their isolation in this discussion will probably be of some help in the future planning of courses.

The comments compiled in the appendix to this report (compiled by E. Gottschalk) will give additional ideas concerning factors effecting the success ("liking") of these classes. It is hoped that this investigation into student (parent and teacher) opinions along with family backgrounds will aid in planning new and current curricula.

APPENDIX 1

PERSHING COUNTY HIGH SCHOOL

MINI CLASS PROGRAM

Compiled by:

Eleanor Gottschalk,
Counselor

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PLANNING COMMITTEE

Marvin Killfoil - Superintendent, Pershing County School District
Richard Frazier - Principal, Pershing County Jr. Sr. High School
Eleanor Gottschalk - Counselor, Pershing County Jr. Sr. High School
James Martolin - Teacher, Pershing County High School

PART I

Inception of the Program: In an attempt to reach all students and to develop for the student a school curriculum more interesting and relevant from the student's point of view, the administration embarked on a search for a program that would meet these needs. As with most educators, the administrators felt the need for change or adjustment, but also felt the need to move cautiously to avoid being trapped into trying anything just for the sake of change.

At the beginning of the 1969-70 school year teachers were informed of the administration's thinking and were asked to consider possible changes which might lead to the goal of making school more relevant and interesting to students. A committee chairman was appointed (in this case the junior-senior high school counselor) who conferred with teachers and collected their suggestions. A preliminary report of these suggestions was presented to the administration, and each teacher was interviewed to further explore the possiblilities of his suggestions. At this juncture it was evident that several teachers had themselves felt the need for change. It was also evident that there were wide differences in the proposed means of achieving the stated goal.* (see attachment 1)

From this beginning and after evaluation by the administration of teachers' suggestions, the search for a plan which would produce the results sought by this school system began in earnest. Many plans and innovations were studied, and finally a plan was found that seemed applicable to the local situation. The mini class program at Needles, California, was a point of departure. Correspondence with the Needles school system insued, and the idea was then presented to the staff. A committee of two administrators, a teacher, and the counselor began laying the foundation of what was to evolve into the mini class

program at Pershing County High School.

Steps in Planning: So a plan was proposed, but a plan must become a reality if the dream is to serve anyone. The work began with much thinking, talking, and exchanging of differing philosophies. "Are mini classes to be a fun and games time?" queried one staff member. Others, seemingly reluctant to step out into deep untried waters, objected to the student-oriented planning of the class. The majority of the staff, however, saw merit in the plan and in its goals and became increasingly enthusiastic about trying the innovation. The "two steps forward and one step backward" phenomenon never reared its head; and although, in retrospect, there are changes that would be made in procedure, the plan never really faltered.

Initially, after detailed presentation of the plan to the faculty followed by a discussion meeting, teachers were asked to consider areas of learning in which they had an interest and which, in their opinions, might be adapted to a mini class. Also, tentative goals were outlined. Basically the orginal goal could be summed up in this statement: Mini classes are designed to give students an opportunity to enroll in a high interest, student-oriented class which will make school more interesting and relevant to the individual student. The stated goal as the project began, by comparison of goals as they evolved, was limited as will be shown later in this report.

Specifically the committee presented to the staff the following goal aimed points which, it was hoped, would become values as the program progressed.

--to prepare students to fill specific local employment needs
--to involve private business in the educational process
--to eliminate unproductive instructional programs

--to provide sensitive and sensible teaching
--to select relevant material and subject matter
--to increase involvement in discussion and acceptance of student ideas

The time had now come to begin the actual planning of classes to be offered. From the original list of teacher-suggested classes a condensed list was routed to the staff for their perusal and further suggestions. * (see attachments 2,3,4) The committee secretary took suggestions and changes from individual teachers, and these changes and suggestions were then incorporated into the questionnaire to be given to the students.

From the beginning the State Department of Education had shown interest and had given support to the program; however, formal endorsement by the department was necessary. State department officials met with the committee at which time questions were asked and suggestions given. The mini program received enthusiastic and unqualified approval.

Discussion of an applicable grading system concluded that either letter grades or pass-fail indications could be used, depending upon the wish of the individual student. One stipulation was suggested: If the student elected a letter grade, he could not later change to pass-fail and vice versa.

The time element of the mini class program was approved. Credit for the classes would be the same as credit given on other scheduled classes. The method of recording mini classes on the student's permanent record was left to the discretion of the school administration.

The enthusiasm and high interest expressed belies the popular conception that educators do not want change. All present concurred that change is needed but that any change must correct problems and enhance the public school curriculum

for each student.

State Department representatives:
John Gamble, deputy superintendent
Robert Best, superintendent of curriculum
John Bunten, superintendent of vocational education
Bert Cooper, director of curriculum
Edward Howard, consultant
Tom Ogg, executive secretary of the textbook commission

Student Involvement in Planning: Once this ground work was completed, the students were brought into the planning. A student assembly at which the mini class idea was presented was followed by classroom presentations. The mini class concept was reviewed, and students were instructed on how to use the questionnaire. No questions were answered at the assembly because smaller group meetings were planned.

Following the assembly, members of the committee met with English classes involving all students. The questionnaire given to the students during the assembly was used as a beginning of the discussions. Additionally students were asked to add their own suggestion. Each questionnaire was tallied, and each student-suggested class was listed. * (Attachment 5,6) The next chore was to incorporate student suggestions into the schedule of mini classes. Each suggestion was considered. Those which could become part of the regular classes- (for example - trampoline, archery, volleyball, boxing, and wrestling are a part of physical education) were noted, and these requests were made known to the teacher of that class. As near as possible, considering staff and facilities, student suggestions were considered equally with those of the staff.

Following the meetings with students in English classes, a day was used to acquaint the students with classes to be offered. The procedure followed included

an assembly where the mini class idea was again reviewed. Students were given the schedule of classes and asked to choose five classes in which they were interested. Before this point had been reached, of course, the schedule had to be organized into a managable administrative unit. Limit in teachers and time necessitated excluding ninth graders from the program, but if the program is a success, they will be included next year.

Pre-registration gives a picture of the workability of the plan: A day after the student assembly, an afternoon scheduling of five fifteen minute periods allowed students to talk with instructors of the classes. In the order of the class choice, the students were instructed to visit with teachers of those classes. If a student's first choice was personal typing, he was instructed to meet with the personal typing teacher first and on with the next four in order of his choice. Pre-registration was held the following day. By this time students were asked to narrow their choices to two - first and second choices for Monday-Wednesday class, and the same for Tuesday-Thursday. The inevitable question was, of course, "What do we do about Friday?" At this point no answer had been defined, but the committee had considered several ideas which will be considered later.

Again student choices were listed. Classes having fewer than four students on the orginial questionnaire list had been deleted so all the classes proposed had had student approval. In classes where registration was too heavy, some students had to be placed in their second choice class. Juniors and seniors were given preference, but all students were given first or second choices in at least one class. Classes were kept small with the maximum of fifteen students except for personal typing and, unfortunately, good grooming. The smallest classes enroll 6 to 7 students. Thus the program was off the ground and ready when school began in August, 1970.

PART II

The Program in Use: Pre-registration of all students in the spring previous to the launching of the program indicated student interest and aided in scheduling. Limitation of faculty dictated that not all students would be in their first choice classes, but all were in a first or second choice class. Transfer students had a limited choice of courses because the most popular or limited-enrollment courses had already been filled. These students may change at the end of the semester, however.

Class enrollment was kept low. Variations of numbers, of course, were dependent upon the class and the students' choices. Enrollment varies from 23 to 7. The average class numbers from 10 to 12. Twenty-one classes are now being offered:

Horse Care
Preventive Maintenance of Farm Machinery
Computer Program
Photography
Arts and Crafts
Personal Typing
Consumer Education
Publications
Creative Writing
Drama Workshop
Speech
How to Get a Job and Hold It
Ethnic Literature and History
Boys' Home Ec.
Good Grooming
Conservation
Welding
Girls' Auto Mechanics
Motor Tune-up
Current Events
Community Problems

Classes are offered on alternate days, Monday-Wednesday and Tuesday-Thursday.

Friday scheduling uses the mini class period for extra-curricular activities.

Organization meetings, assemblies, and group meetings are held during this time.

The Friday schedule may be used any day of the week, therefore eliminating the need to drop class periods for student activities.

At the outset of the mini class proposal, several teachers entered the program with reservation. Teachers who, it was felt by the committee, are more comfortable in a structured program and classroom, objected to the program on various grounds. Some felt the need of textbooks, clear cut planning, and traditional evaluation in regard to grading. Faculty meetings were open discussion periods, but the members of the committee remained concerned in that, in spite of the meetings and person to person discussions, no opinions were radically changed. For the most part, however, the staff was enthusiastic and cautiously eager to try the new plan. With its actual inception problems and new ideas resulted. One surprising turn of events was the students' refusal to accept the responsibility of planning the class. This still remains a stumbling block as well as a trap, for teachers, relying on years of training, feel that something must be going on and tangible results must be evident. It would be safe to say that at the end of the first six weeks, no one was certain of any definite accomplishments.

Meetings with faculty and with students identified many areas wherein adjustment and clarification is needed. A digest would include:

1. Students resistance to a break from traditional classroom procedure based mainly on the idea of required assignments rewarded by a grade.

2. Immaturity and inadequate background of many students, making classroom planning and decision making difficult, if not impossible.

3. Continued teacher resistance aimed at the program's thesis of the student-oriented classroom. One teacher's reasoning behind the objection was based on the belief that high school students need structured classrooms and that open student discussion is of little value because students today are more aware than any previous generation. Other objections included

general disenchantment with the program. People resisting the idea were the same teachers who had voiced disapproval in the beginning. It is now felt that possibly these teachers should be excluded from the program.

4. The limited goals of the program in its inception were found to be lacking. The broadened, almost cosmic, scope of what the mini class might accomplish became almost overwhelming to the evaluators of the idea.

5. Evidence of insecurity felt by both students and faculty. Herein might be the biggest stumbling block of the program; namely, the resistance of both faculty and students to pioneer the new and the unknown.

Evaluation: In retrospect obviously there are some changes, additions, or deletions that might have augmented the program. The remainder of this report will deal with a composite of opinions, suggestions, and evaluations by all persons involved.

Goals: At the inception of the program the aim was to make school more interesting and relevant to the student. Teachers and administrators felt that the program, if successful, would afford some side benefits, but in the beginning caution dictated that statements of specific benefits be considered but not made paramount. Before the end of the first six weeks period, and in spite of floundering on the part of students and faculty alike, the possibilities of the program became more apparent. One teacher enthusiastically commented that some of the self-direction in the mini class carried over into his regular classes thus enhancing the entire learning atmosphere. Students commented mini classes made other classes somewhat easier to comprehend in that they now took more responsibility for learning upon themselves.

Granted, not all people involved felt this way about the classes, but there was enough dialog in this vein to make it worthwhile to take a new look at the goals of the program. At this time, through the use of the Western Regional Educational Research Center, a study was initiated to research and evaluate the program.

New broader goals were considered at this time to define what the program hoped to achieve. A statement of these broader, more comprehensive goals resulted:

For Students:

A. To identify subjects of special interest.
B. To expand their knowledge of the many fields of information, skills, and work.
C. To increase their interest in the school's curriculum.

For Teachers:

D. To experiment with and judge the successes of new teaching and learning techniques.
E. To determine the relative success of student-teacher class planning techniques.

For Administrators/Board:

F. To identify new instructional methods and related school activities which might be used in the district.

For School:

G. To identify and use new community resources (persons, organizations, facilities) in the school's classes.

For State Department of Education:

H. To determine the feasibility of promoting the mini-classes concept within the State.

Those participating in the program are aware that the goals must remain flexible to accomodate the development of the program.

Involvement of staff and students: Evaluation of the mini class program at this point is limited primarily to scrutinizing the planning stage. Until the program has had its trial by time, any final evaluation is premature; but some of the pitfalls and growing pains will be noted.

Much of the dilemma, resistance, and misunderstanding which inhibited the program might have been avoided had the faculty been more dynamically involved from the beginning. More actual time in discussion and planning with the entire faculty could have made all efforts more cohesive. In the future, in-service training

should receive top priority.

Faculty meetings for planning and evaluation will continue during the remainder of the semester. Individual interviews conducted by the counselor will allow faculty members to suggest new classes or improvement of existing classes for next semester.

Equally important is the need for active participation of students. Such involvement would have given greater understanding into the administration of the program and might, too, have served as a pre-adjustment to the student-planning of the mini class. Students were introduced to the program after the planning was complete. The program then did not live up to its stated goal, a student-oriented program, but was rather a pre-planned program presented to the students.

Although everyone now has had his feet wet, the need for involvement still exists. All voices continue to be heard. Students, through the student council and through classroom discussions, will understand the problems of administration of the program, and they will have a voice in the planning of classes to be offered. To date, however, student suggestions have been somewhat disappointing, but evidence is that the students are becoming increasingly knowledgeable about the building of a relevant program.

To think that all faculty members and students are totally happy with the program would be foolishly idealistic, but by raising his voice, each will be satisfied that he has contributed.

Summary Observations: The members of the committee as well as the faculty members had, of course, some preconceived ideas of what would happen in the classroom.

Much discussion rallied around the need for keeping the class student-oriented. The students were told that the class was a place where they could decide what they wanted to learn. The teacher would then be the guide in helping to achieve the learning summit. The beauty of the theory can not be under-appreciated. The bomb was that it didn't work. Students were restive, and teachers discouraged. Nothing was happening. Everyone felt threatened, but no one had a pat answer to change the course of events.

Through much puzzling and searching several facts forced their obvious truth upon all involved. In the first place, students needed and wanted some structure to get them started. They complained, "How do we know what we want to do in a class when we have no background information to get us started?"

Teachers who were too rigid to change continued to conduct mini classes in the same way they had always taught. Some students who are more secure in the structured classroom approved, but other students who had visioned a chance to try their own course of action were not happy. These students chaffed under the same old approach and commented that the teacher dictated the course. Faith in the mini class idea was weakened.

Teachers who dove into the icy waters of teaching adventure were like the dissatisfied students. Their basic concept of having to move from the War of 1812 to World War I in a six weeks period, for example, was pretty well ingrained. To sit in class and wait for something to happen was unnerving to say the least. They tried all kinds of approaches, and as a result, concrete ideas immerged which will spell the demise of some of the early pitfalls.

Some structure and guidance by the teacher is essential to get the class started.

The length and strength of this guidance will depend a good deal on the class and on the students in the class. A class in computer programming, for example, will of necessity have to be more structured than a class in arts and crafts. Only when some understanding of the subject by the students and mutual planning with the teacher is present will the mini class become a high student interest class. For some, the class may never come up to what expectations were held for it. Determination of the success or failure of the mini class program can not be positive until the program has been in operation for a year or two.

Attachment No. 1

PRELIMINARY REPORT
SUGGESTED CHANGES OF CURRICULUM:

The changes listed are suggestions made by various members of the faculty. No effort has been made to edit the changes or to evaluate them. The suggestions are listed in the order that they were received.

1. Division of school day into seven periods allowing double periods for specific classes: shop, home economics, band, art, labs.

2. Same as above on an eight period day.

3. American civilization - (combining English III and U.S.history); 90 minute periods with team teaching on correlated program.

4. Literary History - correlate history and literature similiar to No. 3 using historical and literary periods as a basis of correlation.

5. Speech combination - Communication Arts to be a composite of related communicative skills. First Semester: first six weeks - speech; second six weeks - debate; third six weeks - drama. Second Semester - journalism.

6. Math. curriculum: It is inadvisable to have Math. III and Math. IV on alternate years. Math. III is a prerequisite for Math. IV.

7. Art: Limit the program to junior-senior high school. The program in the elementary school could be handled by elementary teachers. The junior-senior high school program would consist of five classes, two art classes and three crafts classes.

8. Broaden science offerings for ninth grade so that the student would have a choice. Average or above could elect life science, space science, earth science or a combination of all given during the school year. A general science class would be offered for the slower student to satisfy graduation requirements.

9. Reorganize home room to facilitate organizations, drama, speech, etc.

10. Study hall - either abolish or allow more than one.

11. For junior high students who took typing, offer advanced typing. Class could be given during bookkeeping period, for example, if numbers are not too great.

Elementary:

1. First grade music from 2:00 to 2:30, twice a week.
   Third grade music 2:30 to 3:00.
2. New third grade English series.
3. Employ an elementary physical education teacher who could also take care of all recess duty.

Attachment No. 2

Physical Education (Boys)

Weight Training, Fundamentals of golf (could be brought into P.E. program). Wishes to teach all P.E. in order to offer a better total program.

Vocational Agriculture

Horse shoeing, welding, parliamentary procedure, preventive maintenance, judging (livestock, crops, land and range and preparing for contests), horse care and training, small engines, elements of team roping and calf roping, rodeo as a sport (explanation of the major events and the different associations).

Physical Education (Girls)

Personal typing, square dance, social dance.

Math.-Science

Computer programming, slide rule instruction, organic chemistry.
18 weeks 9 weeks full year

Business Education

Business law, personal typing, consumer education, publications, (newspaper only), stenograph shorthand, business machines, preparing for a civil service test.

Music

Music reading, music theory (would call for a pre-requisite of music reading or a demonstration of enough knowledge of principles of music reading).

Guidance

College orientation, creative writing, publications, deletion of group guidance, sociology, speech, how to get a job and hold it, world of work (9 weeks - grades 9, 10), psychology-knowing yourself.

English

Current events (with emphasis on Geography), drama workshop, dramatic literature, speech, geography.

Home Economics

Consumers Education, group guidance, library research, audio-visual media, arts and crafts, home economics for boys, good grooming.

English

Creative writing, current events, ethnic literature, reading development, how to get a job and hold it, current social problems, media understanding, ethnic history.

Science, Physical Education

Earth science, life science, conservation, weight training, welding, spectator sports, track, boxing and wrestling, camp-life outdoors, gun handling and care, basketball theory for boys and girls.

Industrial Arts

Wood turning, auto for girls, minor tuneup, small engine repair, carpentry, operating the metal lathe, automotive brake work, mechanical drawing.

Library

Library research, library science.

Social Studies

Current events, spectator sports, community problems, (sociology from the student standpo.nt). Why do we act the way we do? (psychology).

Art

Arts and crafts, electronics, photography, painting, ceramics, drawing, stage design (lights and sets).

Attachment No. 3

TO: HIGH SCHOOL FACULTY -- GRADES 9 - 12

FROM: MINI COURSE COMMITTEE

RE: COURSE SELECTION

1. Your committee met and concluded an attempt should be made to initiate a curriculum which would include the mini course design.

2. A mini course is to be a course offered two times per week (55 minutes a period) for 9 or 18 weeks and should be taught by an interested teacher. Most mini courses should be high interest for students and relatively few advanced courses offered.

3. In order to get your approval of mini courses to tentatively discuss with students, it is requested you select at least 2 areas - but not more than 4 areas - in which you would instruct. If you do not find, in the listing, courses to your liking, then indicate in space provided such interest courses.

College Orientation
Business Law
Personal Typing
Consumers Education
Math in the home
Auto Mechanics for Girls
Minor Auto Tune-up
Home Ec for Boys
Ethnic History
Ethnic Literature
Library Research
Geology
Psychology
Basic horseshoeing
Basic welding

Drama
Ag - Parliamentary Procedure
Speech Fundamentals
Reading -- development
Geography
Current Events
Creative Writing
Annual
Conservation
Arts and Crafts (Recreation)
Research writing
Audio Visual Media
Music Reading
Music Theory
Chorus

_____
Signature

Attachments # 4

MINI-COURSE COMMITTEE: James Martolin, Eleanor Gottschalk, Richard Frazier and Marvin Killfoil

TEACHERS' SELECTIONS OF POSSIBLE MINI-COURSE INSTRUCTION

Espinosa	Business Law	Personal typing	Consumers Education
Sebbas	Library Research	Library Science	
Baker	Horseshoeing	Welding	Parliamentary Procedure
Stewart	Ethnic History	Current Events	Sociology
Sandusky	Auto for Girls	Minor Tuneup	
Gottschalk	Creative Writing	Annual	Group Guidance Occupational Choice Also, College Orientation
Bakley	Personal Typing		
Rowe	Conservation	Life Science	Audio Visual Media
Arnold	Weight Training	Arts & Crafts	Audio Visual Media
Martolin	Ethnic Literature	Reading Development	Current Events Also, Creative Writing
Chatfield	Computer Programming		
Farr	Music Reading	Music Theory	Chorus
Long	Home Ec for Boys	Arts & Crafts	Consumer Education
Hulse	Drama	Speech	Reading

You will note there is little conflict of interest in subjects. It is hoped other subject matter courses will surface prior to a scheduling attempt.

You should note that subjects listed do not indicate class time - 9/18 weeks; a few more 9 week subjects should be offered in order that the students may have an in and out acceptance.

The Mini-Course plan will be presented to students for reaction as well as ideas on courses pertinent to their desires.

February 2, 1970

Attachment # 5

What is a mini class?

A mini class is a class which, we hope, will make school more interesting. It is a class offered because of high student interest. These classes are offered twice a week for 9 or 18 weeks; therefore, there is the possibility that you may take four high interest classes during one school year.

Listed below are some suggested mini classes in which you might be interested. We also want your ideas of classes you would like offered. Later during the individual class meetings we will give you instructions regarding this list.

____ College Orientation for upper classmen who plan to attend college. The course will answer questions about application and admission, costs and any other questions asked by the students.

____ Business Law - the everyday law that you must know to understand the rights and responsiblilities of an everyday citizen.

____ Personal Typing - typing for your own personal use and enjoyment.

____ Consumer's Education - learning how to spend your money wisely.

____ Creative Writing - for students who have a yen to write for practice, personal satisfaction or enjoyment.

____ Publications - for students with an interest in journalism and a desire to work on the production of the school annual and the newspaper.

____ Group Guidance - group meetings for the purpose of exploring vocational, educational and/or personal problems.

____ Library Research - use of major reference works, periodicals, and other sources of information.

____ Library Science - an introduction to how a library is run.

____ Horse Shoeing - for students interested in shoeing and caring for horses.

____ Welding - for students who want to learn to operate welding equipment and use welding for their personal needs.

____ Parliamentary Procedure - to learn how meetings are conducted in a democratic process.

____ Preventive Maintenance for farm machinery - for students who hope to work on ranches and who will need to know how to care for farm machinery in the field.

____ Ethnic History - for students who want to learn about other races and peoples.

____ Current Events - discussing events in the world today.

____ Sociology - a study of how people live.

____ Auto for Girls - motoring problems girls will encounter in driving a car.

____ Minor Tuneup - minor replacement and adjustment of the ignition and carburetor system.

____ Social and Western Dance - for any student who wants the fun of learning to dance.

____ Earth Science - for students with an interest in learning more about the earth on which we live.

____ Life Science - the study of living things in relation to world environment.

____ Audio-visual media - how to operate and knowledge of uses of movie, film strips, overhead projectors, tape recorders, etc.

____ Conservation - for students interested in the preservation of our natural resources, water, air, land and wild life.

____ Weight Training - using weights and body conditioning.

____ Arts and Crafts - individualized creations of useful or decorative objects using readily available materials.

____ Ethnic Literature - for students who want to read and discuss what peoples of other reaces and nationalities write.

____ Reading Development - (pleasure, improvement, overcoming difficulty) reading various types of materials which will fulfill your interest.

____ Computer Programming - covering history, operation and use of computers.

____ Music Reading - basic principles of reading notes and timing but not actually playing an instrument.

____ Music Theory - scales, chords, intervals - what makes music tick.

____ Chorus - for boys and girls who enjoy singing.

____ Home Ec. for boys - the basics of operating and maintaining a bachelor pad.

____ Drama Workshop - production of a play, acting, make-up, set construction, lighting, costumes.

____Dramatic Literature - reading plays for amusement, understanding and enjoyment.

____ Speech - speaking and speech improvement.

____ How to get a Job and Hold it - farm, service station, restaurant, motel maid, etc.

____ Spectator Sports -learning rules and how g mes are played so that you may better enjoy watching.

____ Electronics - introduction to ham radio, T.V. and radio.

____ Geography - a study of our changing world pretaining to nations, peoples, and economics.

____ Photography - for students who have an interest in taking and developing a good picture.

We want your ideas of what mini classes you would like offered.

Please write your own suggestions on the spaces provided.

_____

_____

_____

_____

_____

_____
NAME

Attachment # 6

STUDENT SUGGESTIONS:

1. Medical Class other than health
2. Child Care & Baby sitting
3. Pshchology 6
4. Coed volleyball 2
5. Bridge
6. Beauty Course for Girls 8
7. Debate
8. Helping disabled
9. Language-French, German 1
10. Leathercraft 1
11. Piano
12. Introduction to Vet-Medicine
13. Animal diseases & injuries 1
14. Painting
15. Gun Handling & Care 3
16. Commercial Art
17. Architecture
18. Drugs
19. Hairstyling
20. Sewing
21. Home Improvement 1
22. Interior decoration
23. Coed P.E. 1
24. Archery 15
25. Body work (auto)
26. Transmission repair
27. Fishing tips
28. Knowing your game & hunting
29. Trampoline 6
30. Ceramics
31. Boxing & wrestling 4
32. Volleyball 3
33. Nursing 1
34. Working with M.R. (how to care for)
35. Fixing & repairing small engines 1
36. Survival
37. Camping-life outdoors
38. Judo - Karate
39. Torch (cutting, etc.) 1
40. Carpentry (build a house or barn)
41. Golf 1
42. Horse care & training 1
43. How to date
44. Rocketry 1
45. Slide rule instruction 1
46. Another course in different parts of car & engine
47. Conversation - art of
48. Body training - diet
49. Horseback riding
50. Good grooming 6
51. Fashion Merchandising
52. Drawing
53. Calculus
54. Advanced Spanish 1
55. Tumbling
56. First Aid & Home emergencies
57. Astrology 4
58. Manners 2
59. Drawing
60. Women's Services (Marines)
61. Aerodynamics
62. Mech. Drawing
63. English
64. Astronomy
65. Gormet cooking
66. Oil painting
67. Yoga
68. Modern Dance
69. Modeling & Posture
70. Learning about yourself
71. Track
72. Oceanography 1
73. Running a Lathe
74. Automotive brake work
75. Advanced Mechanical Drawing

APPENDIX 2

PERSHING COUNTY SCHOOL DISTRICT

LOVELOCK, NEVADA 89419

MARVIN KILLFOIL, COUNTY SUPERINTENDENT

PERSHING CO. JR.-SR. HIGH SCHOOL
RICHARD C. FRAZIER, PRINCIPAL

LOVELOCK ELEMENTARY SCHOOL
KARL HOSTMAN, PRINCIPAL

September 10, 1970

Dear Parents:

As you have read in the local paper and heard from your son/daughter, we have begun to offer this school year a variety of short, high-interest classes (mini-classes).

We are interested in the opinions of students, parents and school personnel concerning the mini-classes offered. Will you please indicate your current opinions about mini-classes on the attached form. At this early stage you may not be able to answer some of the questions, if not, skip them. There is one questionnaire supplied for each class each son/daughter is taking this semester.

If you have more than one child participating in the mini-classes, you will receive two questionnaires for each child. This is the first of a series of questionnaires to see if the new classes are worthwhile.

For your convenience, we are enclosing a stamped self-addressed envelope. Thank you for assisting us in this survey.

Sincerely yours,

Richard C. Frazier

Richard C. Frazier
Principal

rcf/msm
encs.

Pershing County High School

MINI-COURSE QUESTIONNAIRE 124

Dear Student, Teacher, Parent, or Administrator:

As a participant in this mini-course, we would appreciate your answering the following questions. By doing this, the information gathered will help us to judge the success of this mini-course and to plan others. Since you will not put your name on this questionnaire you cannot be identified. Feel free to answer the questions as frankly as possible.

Thank You,
Richard Frazier, Principal

This course was chosen because: (mark one position along the scale to indicate your response)

Like Class	___: ___: ___: ___: ___: ___: ___	Dislike Class
Like Teacher	___: ___: ___: ___: ___: ___: ___	Dislike Teacher
Sounds Easy	___: ___: ___: ___: ___: ___: ___	Sounds Hard
Lots of Friends in it	___: ___: ___: ___: ___: ___: ___	No Friends in it
New Experience	___: ___: ___: ___: ___: ___: ___	Old Experience
Completely New Instructor	___: ___: ___: ___: ___: ___: ___	Well-Known Instructor
Encouraged in Taking	___: ___: ___: ___: ___: ___: ___	Discouraged from Taking
Wanted <u>This</u> Class	___: ___: ___: ___: ___: ___: ___	Wanted <u>Any</u> Class
Wanted to Broaden Interests	___: ___: ___: ___: ___: ___: ___	Wanted to Channel Interests
Had a Course Like it	___: ___: ___: ___: ___: ___: ___	Never had a Course Like it
Like Short Courses	___: ___: ___: ___: ___: ___: ___	Dislike Short Courses

Other reasons (fill in high and low end with opposite meaning words, such as easy - hard, good - bad, etc., and check response).

Other _____	High ___: ___: ___: ___: ___: ___: ___	Low _____	Other
Other _____	High ___: ___: ___: ___: ___: ___: ___	Low _____	Other

About <u>this</u> course:

First Choice	___: ___: ___: ___: ___: ___: ___	Last Choice
Time Too Long	___: ___: ___: ___: ___: ___: ___	Time Too Short
Too Many Materials	___: ___: ___: ___: ___: ___: ___	Not Enough Materials
Too Many Resources	___: ___: ___: ___: ___: ___: ___	Not Enough Resources

answer the questions as frankly as possible.

Thank You,
Richard Frazier, Principal

This course was chosen because: (mark one position along the scale to indicate your response)

Like Class	___: ___: ___: ___: ___: ___: ___	Dislike Class
Like Teacher	___: ___: ___: ___: ___: ___: ___	Dislike Teacher
Sounds Easy	___: ___: ___: ___: ___: ___: ___	Sounds Hard
Lots of Friends in it	___: ___: ___: ___: ___: ___: ___	No Friends in it
New Experience	___: ___: ___: ___: ___: ___: ___	Old Experience
Completely New Instructor	___: ___: ___: ___: ___: ___: ___	Well-Known Instructor
Encouraged in Taking	___: ___: ___: ___: ___: ___: ___	Discouraged from Taking
Wanted <u>This</u> Class	___: ___: ___: ___: ___: ___: ___	Wanted <u>Any</u> Class
Wanted to Broaden Interests	___: ___: ___: ___: ___: ___: ___	Wanted to Channel Interests
Had a Course Like it	___: ___: ___: ___: ___: ___: ___	Never had a Course Like it
Like Short Courses	___: ___: ___: ___: ___: ___: ___	Dislike Short Courses

Other reasons (fill in high and low end with opposite meaning words, such as easy - hard, good - bad, etc., and check response).

Other _____	High ___: ___: ___: ___: ___: ___: ___	Low _____ Other
Other _____	High ___: ___: ___: ___: ___: ___: ___	Low _____ Other

About <u>this</u> course:

First Choice	___: ___: ___: ___: ___: ___: ___ Last Choice
Time Too Long	___: ___: ___: ___: ___: ___: ___ Time Too Short
Too Many Materials	___: ___: ___: ___: ___: ___: ___ Not Enough Materials
Too Many Resources	___: ___: ___: ___: ___: ___: ___ Not Enough Resources
Teacher-Pupil Planning - Sufficient	___: ___: ___: ___: ___: ___: ___ Teacher-Pupil Planning - Insufficient
Teacher Prepared	___: ___: ___: ___: ___: ___: ___ Teacher Unprepared
Class Too Large	___: ___: ___: ___: ___: ___: ___ Class Too Small

About Mini-courses in general:

Offer Many	___: ___: ___: ___: ___: ___: ___ Offer None
Widen Subject Choices	___: ___: ___: ___: ___: ___: ___ Narrow Subject Choices
Good Idea	___: ___: ___: ___: ___: ___: ___ Bad Idea

Suggested Subjects for future courses:

_____ _____

(Please continue with questions on the back of this sheet)

MINI-COURSE QUESTIONNAIRE (continued)

How interested in this mini course are:

you

High-Interest ___: ___: ___: ___: ___: ___: ___ Low-Interest

your friends

High-Interest ___: ___: ___: ___: ___: ___: ___ Low-Interest

your teacher

High-Interest ___: ___: ___: ___: ___: ___: ___ Low-Interest

other teachers

High-Interest ___: ___: ___: ___: ___: ___: ___ Low-Interest

your family

High-Interest ___: ___: ___: ___: ___: ___: ___ Low-Interest

If you were teaching this mini-course how important would the following be?

Skills Important ___: ___: ___: ___: ___: ___: ___ Skills Not Important

Job Opportunities Important ___: ___: ___: ___: ___: ___: ___ Job Opportunities Not Impor

Contact with Working People Important ___: ___: ___: ___: ___: ___: ___ Contact with Working People Not Important

Projects Important ___: ___: ___: ___: ___: ___: ___ Projects Not Important

Practical Experience Important ___: ___: ___: ___: ___: ___: ___ Practical Experience Not Important

Library Work Important ___: ___: ___: ___: ___: ___: ___ Library Work Not Important

Tests Frequent ___: ___: ___: ___: ___: ___: ___ Tests Infrequent

Letter Grades Necessary ___: ___: ___: ___: ___: ___: ___ Letter Grades Not Necessary

NAME OF COURSE _____

YOUR AGE _____

HIGH SCHOOL CLASS _____

POSSIBLE FUTURE OCCUPATIONS (1) _____

High-Interest ___: ___: ___: ___: ___: ___: ___ Low-Interest

your teacher

High-Interest ___: ___: ___: ___: ___: ___: ___ Low-Interest

other teachers

High-Interest ___: ___: ___: ___: ___: ___: ___ Low-Interest

your family

High-Interest ___: ___: ___: ___: ___: ___: ___ Low-Interest

If you were teaching this mini-course how important would the following be?

Skills Important ___: ___: ___: ___: ___: ___: ___ Skills Not Important

Job Opportunities Important ___: ___: ___: ___: ___: ___: ___ Job Opportunities Not Impor

Contact with Working People Important ___: ___: ___: ___: ___: ___: ___ Contact with Working People Not Important

Projects Important ___: ___: ___: ___: ___: ___: ___ Projects Not Important

Practical Experience Important ___: ___: ___: ___: ___: ___: ___ Practical Experience Not Important

Library Work Important ___: ___: ___: ___: ___: ___: ___ Library Work Not Important

Tests Frequent ___: ___: ___: ___: ___: ___: ___ Tests Infrequent

Letter Grades Necessary ___: ___: ___: ___: ___: ___: ___ Letter Grades Not Necessary

NAME OF COURSE _____

YOUR AGE _____

HIGH SCHOOL CLASS _____

POSSIBLE FUTURE OCCUPATIONS (1) _____

(2) _____

(How certain are you of occupation choice?)

(1) Very Certain ___: ___: ___: ___: ___: ___: ___ Uncertain

(2) Very Certain ___: ___: ___: ___: ___: ___: ___ Uncertain

Comments: _____

_____

_____

DO NOT WRITE YOUR NAME

ANYWHERE ON THIS SHEET

Pershing County High School

MID-TERM MINI-CLASS QUESTIONNAIRE
****

Dear Student and Teacher:

As a participant in this mini-class, your answers to the following questions are important to the evaluation and continuation of the program. Note that this questionnaire is shorter than the first one. Please ask for help if you need any - and answer all questions frankly. Thanks!

Richard Frazier, Principal

DIRECTIONS: Each question asks you to place an X somewhere along a rating scale. Usually you can think of the scale as being "highest" to the left and "lowest" to the right. For example:

WHAT I THINK OF THE EXTRA-CURRICULUM PROGRAM:

If you have a high opinion of this program mark an X to the left:

Sufficient Activities _X_: ___: ___: ___: ___: ___: ___ Insufficient Activities

If you have a low opinion of this program mark an X to the right:

Sufficient Activities ___: ___: ___: ___: ___: ___: _X_ Insufficient Activities

If you have no opinion either way, place an X in the center:

Sufficient Activities ___: ___: ___: _X_: ___: ___: ___ Insufficient Activities

Other opinions will fall at other positions along the scale.

I. AT THIS TIME I FEEL THIS WAY ABOUT THIS MINI-CLASS:

Like Class ___: ___: ___: ___: ___: ___: ___ Dislike Class

Like Teacher ___: ___: ___: ___: ___: ___: ___ Dislike Teacher

Class is Easy ___: ___: ___: ___: ___: ___: ___ Class is Hard

Lots of Friends in it ___: ___: ___: ___: ___: ___: ___ No Friends in it

New Experience ___: ___: ___: ___: ___: ___: ___ Old Experience

Encouraged in Taking ___: ___: ___: ___: ___: ___: ___ Discouraged from Taking

Like Two-Days Per Week Classes ___: ___: ___: ___: ___: ___: ___ Dislike Two-Days Per Week Classes

Class Time Too Long ___: ___: ___: ___: ___: ___: ___ Class Time Too Short

important to the evaluation and continuation of the program. Note that this questionnaire is shorter than the first one. Please ask for help if you need any - and answer all questions frankly. Thanks!

Richard Frazier, Principal

DIRECTIONS: Each question asks you to place an X somewhere along a rating scale. Usually you can think of the scale as being "highest" to the left and "lowest" to the right. For example:

WHAT I THINK OF THE EXTRA-CURRICULUM PROGRAM:

If you have a high opinion of this program mark an X to the left:

Sufficient Activities _X_ : ___ : ___ : ___ : ___ : ___ : ___ Insufficient Activities

If you have a low opinion of this program mark an X to the right:

Sufficient Activities ___ : ___ : ___ : ___ : ___ : ___ : _X_ Insufficient Activities

If you have no opinion either way, place an X in the center:

Sufficient Activities ___ : ___ : ___ : _X_ : ___ : ___ : ___ Insufficient Activities

Other opinions will fall at other positions along the scale.

I. AT THIS TIME I FEEL THIS WAY ABOUT THIS MINI-CLASS:

Like Class ___ : ___ : ___ : ___ : ___ : ___ : ___ Dislike Class

Like Teacher ___ : ___ : ___ : ___ : ___ : ___ : ___ Dislike Teacher

Class is Easy ___ : ___ : ___ : ___ : ___ : ___ : ___ Class is Hard

Lots of Friends in it ___ : ___ : ___ : ___ : ___ : ___ : ___ No Friends in it

New Experience ___ : ___ : ___ : ___ : ___ : ___ : ___ Old Experience

Encouraged in Taking ___ : ___ : ___ : ___ : ___ : ___ : ___ Discouraged from Taking

Like Two-Days Per Week Classes ___ : ___ : ___ : ___ : ___ : ___ : ___ Dislike Two-Days Per Week Classes

Class Time Too Long ___ : ___ : ___ : ___ : ___ : ___ : ___ Class Time Too Short

Too Many Materials ___ : ___ : ___ : ___ : ___ : ___ : ___ Not Enough Materials

Too Many Resources ___ : ___ : ___ : ___ : ___ : ___ : ___ Not Enough Resources

Teacher-Pupil Planning Sufficient ___ : ___ : ___ : ___ : ___ : ___ : ___ Teacher-Pupil Planning Insufficient

Teacher Prepared ___ : ___ : ___ : ___ : ___ : ___ : ___ Teacher Unprepared

Class Too Large ___ : ___ : ___ : ___ : ___ : ___ : ___ Class Too Small

II. AT THIS TIME HOW INTERESTED IN THIS CLASS ARE:

You
High Interest ___: ___: ___: ___: ___: ___: ___ Low Interest

Your Teacher
High Interest ___: ___: ___: ___: ___: ___: ___ Low Interest

Your Family
High Interest ___: ___: ___: ___: ___: ___: ___ Low Interest

III. IN THIS MINI-CLASS HOW IMPORTANT DO YOU CONSIDER THE FOLLOWING?

Abilities Important ___: ___: ___: ___: ___: ___: ___ Abilities Not Important

Connection With an Occupation Important ___: ___: ___: ___: ___: ___: ___ Connection With an Occupation Not Important

Contact With Non-School People Important ___: ___: ___: ___: ___: ___: ___ Contact With Non-School People Not Important

Special Activities Important ___: ___: ___: ___: ___: ___: ___ Special Activities Not Important

Practical Experience in Class Important ___: ___: ___: ___: ___: ___: ___ Practical Experience in Class Not Important

Library Work Important ___: ___: ___: ___: ___: ___: ___ Library Work Not Important

Tests Frequent ___: ___: ___: ___: ___: ___: ___ Tests Infrequent

Letter Grades Necessary ___: ___: ___: ___: ___: ___: ___ Letter Grades Not Necessary

IV. WHAT I THINK ABOUT MINI-CLASSES IN GENERAL:

Offer Many ___: ___: ___: ___: ___: ___: ___ Offer None

Greater Variety of Subjects ___: ___: ___: ___: ___: ___: ___ Smaller Variety of Subjects

Good Idea ___: ___: ___: ___: ___: ___: ___ Bad Idea

Suggested Subjects for future classes:

_____ _____

_____ _____

III. IN THIS MINI-CLASS HOW IMPORTANT DO YOU CONSIDER THE FOLLOWING?

Abilities Important	___:	___:	___:	___:	___:	___:	___ Abilities Not Important
Connection With an Occupation Important	___:	___:	___:	___:	___:	___:	___ Connection With an Occupation Not Important
Contact With Non-School People Important	___:	___:	___:	___:	___:	___:	___ Contact With Non-School People Not Important
Special Activities Important	___:	___:	___:	___:	___:	___:	___ Special Activities Not Important
Practical Experience in Class Important	___:	___:	___:	___:	___:	___:	___ Practical Experience in Class Not Important
Library Work Important	___:	___:	___:	___:	___:	___:	___ Library Work Not Important
Tests Frequent	___:	___:	___:	___:	___:	___:	___ Tests Infrequent
Letter Grades Necessary	___:	___:	___:	___:	___:	___:	___ Letter Grades Not Necessary

IV. WHAT I THINK ABOUT MINI-CLASSES IN GENERAL:

Offer Many	___:	___:	___:	___:	___:	___:	___ Offer None
Greater Variety of Subjects	___:	___:	___:	___:	___:	___:	___ Smaller Variety of Subjects
Good Idea	___:	___:	___:	___:	___:	___:	___ Bad Idea

Suggested Subjects for future classes:

_____ _____

_____ _____

_____

NAME OF CLASS _____

YOUR (STUDENT) AGE_____

YOUR (STUDENT) HIGH SCHOOL CLASS: 10th _____
11th _____
12th _____

Pershing County High School

POST-TERM MINI-CLASS QUESTIONNAIRE
****

Dear Student and Teacher:

As a participant in this mini-class, your answers to the following questions are important to the evaluation and continuation of the program. Please ask for help if you need any - and answer all questions frankly. The questions on this questionnaire refer to the mini-classes that you were enrolled in last semester. Please be certain that you fill out one of these forms for <u>each</u> mini-class in which you were enrolled. Thanks!

Richard Frazier, Principal

DIRECTIONS: Each question asks you to place an X somewhere along a rating scale. <u>Usually</u> you can think of the scale as being "highest" to the left and "lowest" to the right. For example:

WHAT I THINK OF THE EXTRA-CURRICULUM PROGRAM:

If you have a high opinion of this program mark an X to the left:

Sufficient Activities X : ___ : ___ : ___ : ___ : ___ : ___ Insufficient Activities

If you have a low opinion of this program mark an X to the right:

Sufficient Activities ___ : ___ : ___ : ___ : ___ : ___ : X Insufficient Activities

If you have no opinion either way, place an X in the center:

Sufficient Activities ___ : ___ : ___ : X : ___ : ___ : ___ Insufficient Activities

Other opinions will fall at other positions along the scale.

I. AT THIS TIME I FEEL THIS WAY ABOUT <u>THIS</u> MINI-CLASS:

Like Class ___ : ___ : ___ : ___ : ___ : ___ : ___ Dislike Class

Like Teacher ___ : ___ : ___ : ___ : ___ : ___ : ___ Dislike Teacher

Class is Easy ___ : ___ : ___ : ___ : ___ : ___ : ___ Class is Hard

Lots of Friends in it ___ : ___ : ___ : ___ : ___ : ___ : ___ No Friends in it

New Experience ___ : ___ : ___ : ___ : ___ : ___ : ___ Old Experience

Encouraged in Taking ___ : ___ : ___ : ___ : ___ : ___ : ___ Discouraged from Taking

Like Two-Days Per Week Classes ___ : ___ : ___ : ___ : ___ : ___ : ___ Dislike Two-Days Per Week Classes

Class Time Too Long

if you need any - and answer all questions frankly. The questions on this questionnaire refer to the mini-classes that you were enrolled in last semester. Please be certain that you fill out one of these forms for <u>each</u> mini-class in which you were enrolled. Thanks!

Richard Frazier, Principal

DIRECTIONS: Each question asks you to place an X somewhere along a rating scale. <u>Usually</u> you can think of the scale as being "highest" to the left and "lowest" to the right. For example:

WHAT I THINK OF THE EXTRA-CURRICULUM PROGRAM:

If you have a high opinion of this program mark an X to the left:

Sufficient Activities _X_ : ___ : ___ : ___ : ___ : ___ : ___ Insufficient Activities

If you have a low opinion of this program mark an X to the right:

Sufficient Activities ___ : ___ : ___ : ___ : ___ : ___ : _X_ Insufficient Activities

If you have no opinion either way, place an X in the center:

Sufficient Activities ___ : ___ : ___ : _X_ : ___ : ___ : ___ Insufficient Activities

Other opinions will fall at other positions along the scale.

I. AT THIS TIME I FEEL THIS WAY ABOUT <u>THIS</u> MINI-CLASS:

Like Class ___ : ___ : ___ : ___ : ___ : ___ : ___ Dislike Class

Like Teacher ___ : ___ : ___ : ___ : ___ : ___ : ___ Dislike Teacher

Class is Easy ___ : ___ : ___ : ___ : ___ : ___ : ___ Class is Hard

Lots of Friends in it ___ : ___ : ___ : ___ : ___ : ___ : ___ No Friends in it

New Experience ___ : ___ : ___ : ___ : ___ : ___ : ___ Old Experience

Encouraged in Taking ___ : ___ : ___ : ___ : ___ : ___ : ___ Discouraged from Taking

Like Two-Days Per Week Classes ___ : ___ : ___ : ___ : ___ : ___ : ___ Dislike Two-Days Per Week Classes

Class Time Too Long ___ : ___ : ___ : ___ : ___ : ___ : ___ Class Time Too Short

Too Many Materials ___ : ___ : ___ : ___ : ___ : ___ : ___ Not Enough Materials

Too Many Resources ___ : ___ : ___ : ___ : ___ : ___ : ___ Not Enough Resources

Teacher-Pupil Planning Sufficient ___ : ___ : ___ : ___ : ___ : ___ : ___ Teacher-Pupil Planning Insufficient

Teacher Prepared ___ : ___ : ___ : ___ : ___ : ___ : ___ Teacher Unprepared

Class Too Large ___ : ___ : ___ : ___ : ___ : ___ : ___ Class Too Small

II. AT THIS TIME HOW INTERESTED IN THIS CLASS ARE:

You
High Interest ___: ___: ___: ___: ___: ___: ___ Low Interest

Your Teacher
High Interest ___: ___: ___: ___: ___: ___: ___ Low Interest

Your Family
High Interest ___: ___: ___: ___: ___: ___: ___ Low Interest

III. IN THIS MINI-CLASS HOW IMPORTANT DO YOU CONSIDER THE FOLLOWING?

Abilities Important ___: ___: ___: ___: ___: ___: ___ Abilities Not Important

Connection With an Occupation Important ___: ___: ___: ___: ___: ___: ___ Connection With an Occupation Not Important

Contact With Non-School People Important ___: ___: ___: ___: ___: ___: ___ Contact With Non-School People Not Important

Special Activities Important ___: ___: ___: ___: ___: ___: ___ Special Activities Not Important

Practical Experience in Class Important ___: ___: ___: ___: ___: ___: ___ Practical Experience in Class Not Important

Library Work Important ___: ___: ___: ___: ___: ___: ___ Library Work Not Important

Tests Frequent ___: ___: ___: ___: ___: ___: ___ Tests Infrequent

Letter Grades Necessary ___: ___: ___: ___: ___: ___: ___ Letter Grades Not Necessary

IV. WHAT I THINK ABOUT MINI-CLASSES IN GENERAL:

Offer Many ___: ___: ___: ___: ___: ___: ___ Offer None

Greater Variety of Subjects ___: ___: ___: ___: ___: ___: ___ Smaller Variety of Subjects

Good Idea ___: ___: ___: ___: ___: ___: ___ Bad Idea

Suggested Subjects for future classes:

_____ _____ _____

_____ _____

High Interest ___: ___: ___: ___: ___: ___: ___ Low Interest

Your Teacher
High Interest ___: ___: ___: ___: ___: ___: ___ Low Interest

Your Family
High Interest ___: ___: ___: ___: ___: ___: ___ Low Interest

III. IN THIS MINI-CLASS HOW IMPORTANT DO YOU CONSIDER THE FOLLOWING?

Abilities Important ___: ___: ___: ___: ___: ___: ___ Abilities Not Important

Connection With an Occupation Important ___: ___: ___: ___: ___: ___: ___ Connection With an Occupation Not Important

Contact With Non-School People Important ___: ___: ___: ___: ___: ___: ___ Contact With Non-School People Not Important

Special Activities Important ___: ___: ___: ___: ___: ___: ___ Special Activities Not Important

Practical Experience in Class Important ___: ___: ___: ___: ___: ___: ___ Practical Experience in Class Not Important

Library Work Important ___: ___: ___: ___: ___: ___: ___ Library Work Not Important

Tests Frequent ___: ___: ___: ___: ___: ___: ___ Tests Infrequent

Letter Grades Necessary ___: ___: ___: ___: ___: ___: ___ Letter Grades Not Necessary

IV. WHAT I THINK ABOUT MINI-CLASSES IN GENERAL:

Offer Many ___: ___: ___: ___: ___: ___: ___ Offer None

Greater Variety of Subjects ___: ___: ___: ___: ___: ___: ___ Smaller Variety of Subjects

Good Idea ___: ___: ___: ___: ___: ___: ___ Bad Idea

Suggested Subjects for future classes:

_____ _____

_____ _____

NAME OF CLASS _____

YOUR (STUDENT) BIRTHDATE: _____

YOUR (STUDENT) HIGH SCHOOL CLASS: 10th _____
11th _____
12th _____

YOUR SEX: Boy _____
Girl _____

BE SURE THAT YOU FILL ONE OF THESE FORMS OUT FOR EACH MINI-CLASS OF LAST SEMESTER.

APPENDIX 3

PUPILS'/TEACHERS' RATINGS OF SELECTED ATTITUDE FACTORS RELATED TO MINI-CLASSES, FALL, 1970, AT PERSHING COUNTY HIGH SCHOOL

REPORT

April, 1971

Prepared by the

WESTERN NEVADA REGIONAL EDUCATION CENTER

220 Main Street
P. O. Box 421
Lovelock, Nevada 89419

Tel. (702) 273-2631

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I. INTRODUCTION

Following several months of planning and preparation, the Pershing County High School launched a mini-class project during the Fall semester of 1970. The project's rationale, objectives, and procedures met with the approval of the Nevada State Department of Education thus qualifying it as a pilot project in the State.

Persons interested in additional background information are referred to an outline of the program available from Eleanor Gottschalk, High School Counselor.

Early in the project, the Western Nevada Regional Education Center, an ESEA Title III research center located in Lovelock, was retained to conduct an evaluation of the project. The Center staff worked with school principal Richard Frazier and Eleanor Gottschalk in preparing a questionnaire (see page 8) and gathering the data.

The questionnaire was given to the students and teachers at pre, mid and post points in the Fall semester. A copy of the questionnaire is enclosed in this first report.

Following is a brief report on the students/teachers ratings of factors deemed most important by the school and Center. Possibly other factors will be reported at a later date.

II. GOALS

PERSHING COUNTY HIGH SCHOOL MINI-CLASSES PROJECT

For Students:

A. To identify subjects of special interest.
B. To expand their knowledge of the many fields of information, skills, and work.
C. To increase their interest in the school's curriculum.

For Teachers:

D. To experiment with and judge the successes of new teaching and learning techniques.
E. To determine the relative success of student-teacher class planning techniques.

For Administrators/Board:

F. To identify new instructional methods and related school activities which might be used in the district.

For School:

G. To identify and use new community resources (persons, organizations, facilities) in the school's classes.

For State Department of Education:

H. To determine the feasibility of promoting the mini-classes concept within the State.

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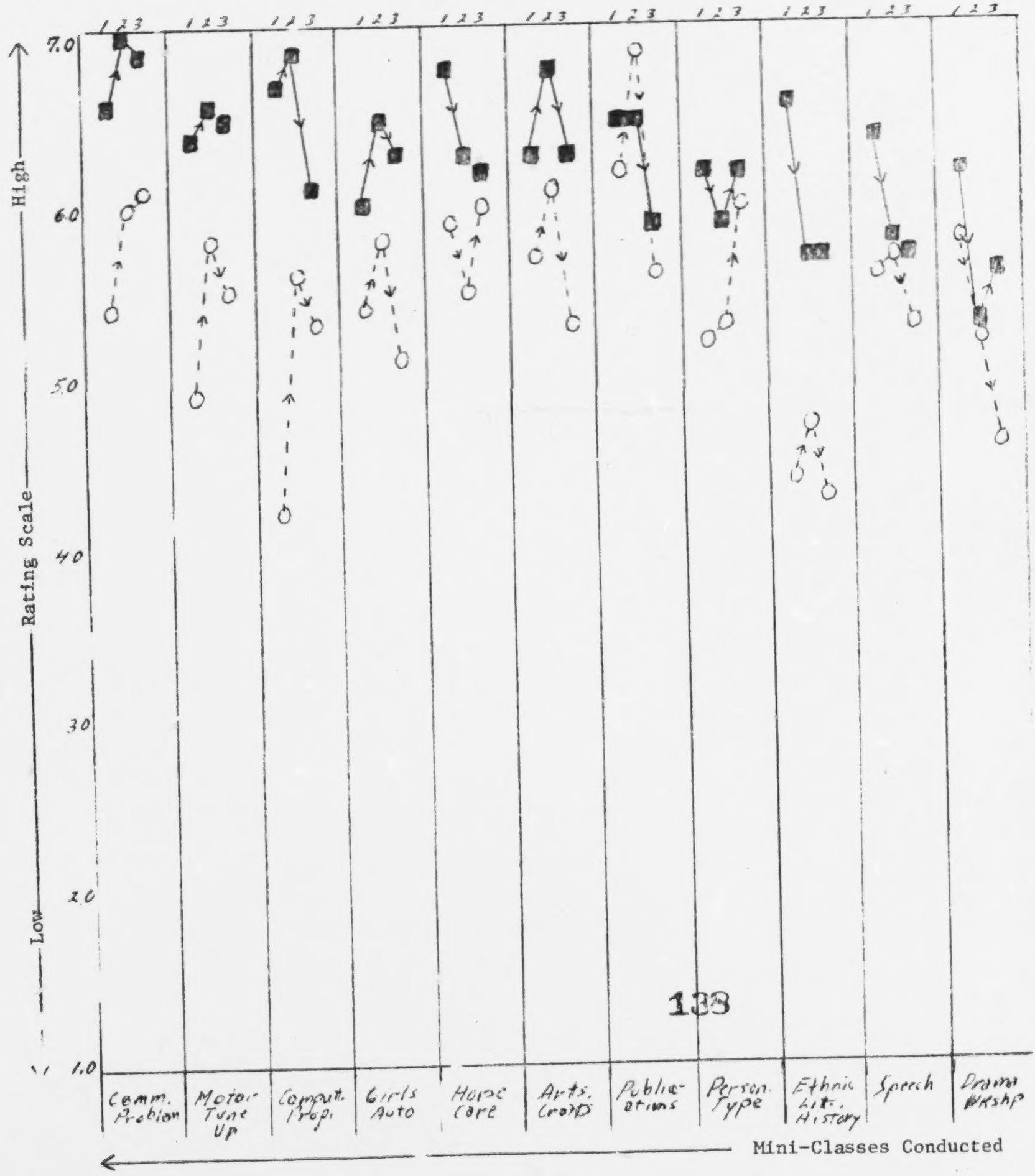
PERSHING COUNTY HIGH SCHOOL

Profile Chart #1 - STUDENT RESPONSES RELATIVE TO:

Explanations: 1 = Pre-Term Questionnaire
2 = Mid-Term "
3 = Post-Term "



O O L

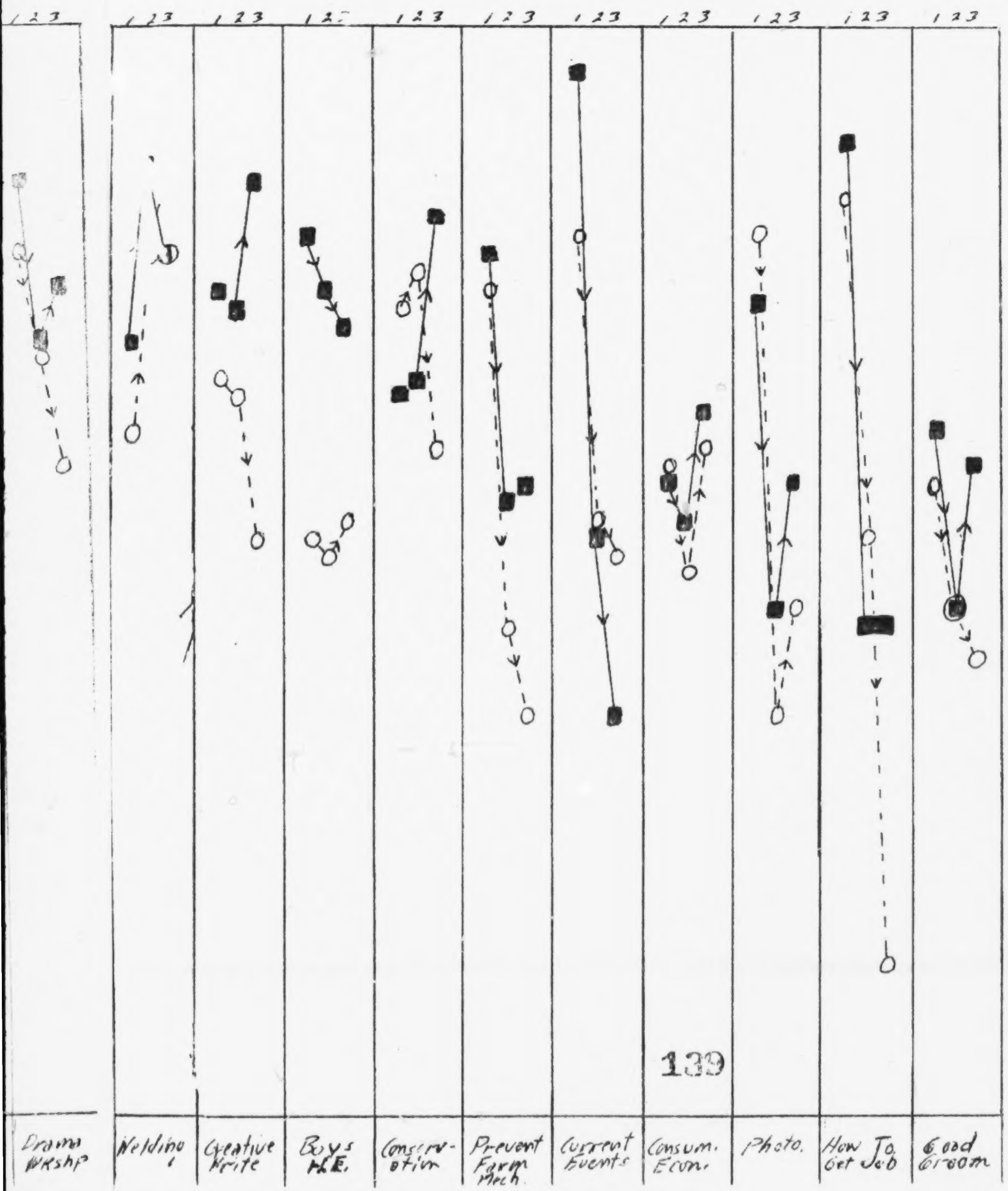
TO:

M I N I - C L A S S P R O J E C T - F A L L, 1 9 7 0

(1) Like (this) Class, and (2) Teacher-Pupil Planning.

■ = "Like (this) Class" question

○ = "Teacher-Pupil Planning Importance/Sufficiency" question



ucted - Fall Semester, 1970 ->

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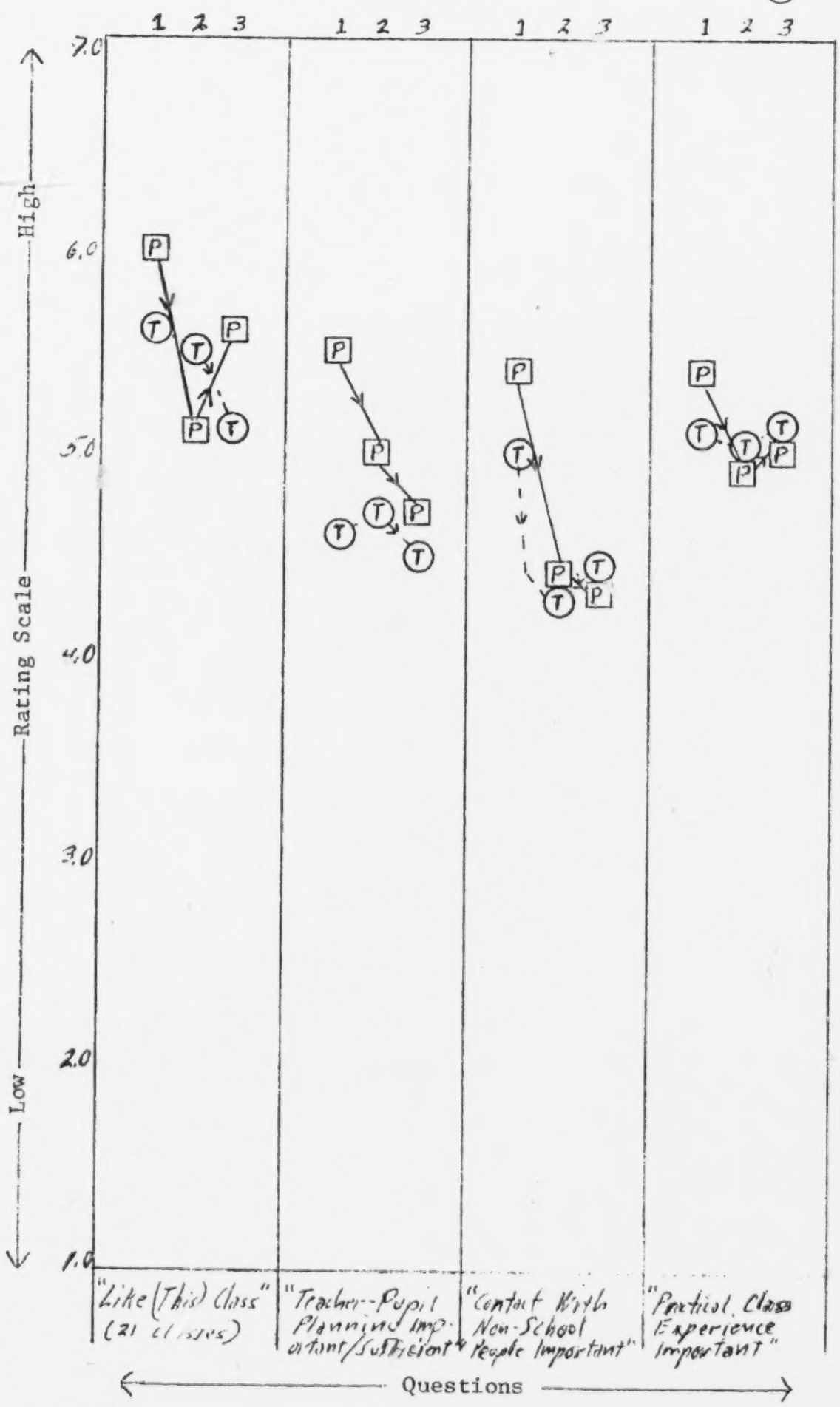
PERSHING COUNTY HIGH SCHOOL MINI-CLASS PROJECT - FALL, 1970

Profile Chart #2 - PUPILS/TEACHERS RESPONSES RELATIVE TO:
(1) Like Class, (2) Teacher-Pupil Planning,
(3) Non-School Involvement,
(4) Practical Experience.

Explanations: 1 = Pre-Term Questionnaire
2 = Mid-Term "
3 = Post-Term "

[P] = Pupils

(T) = Teachers



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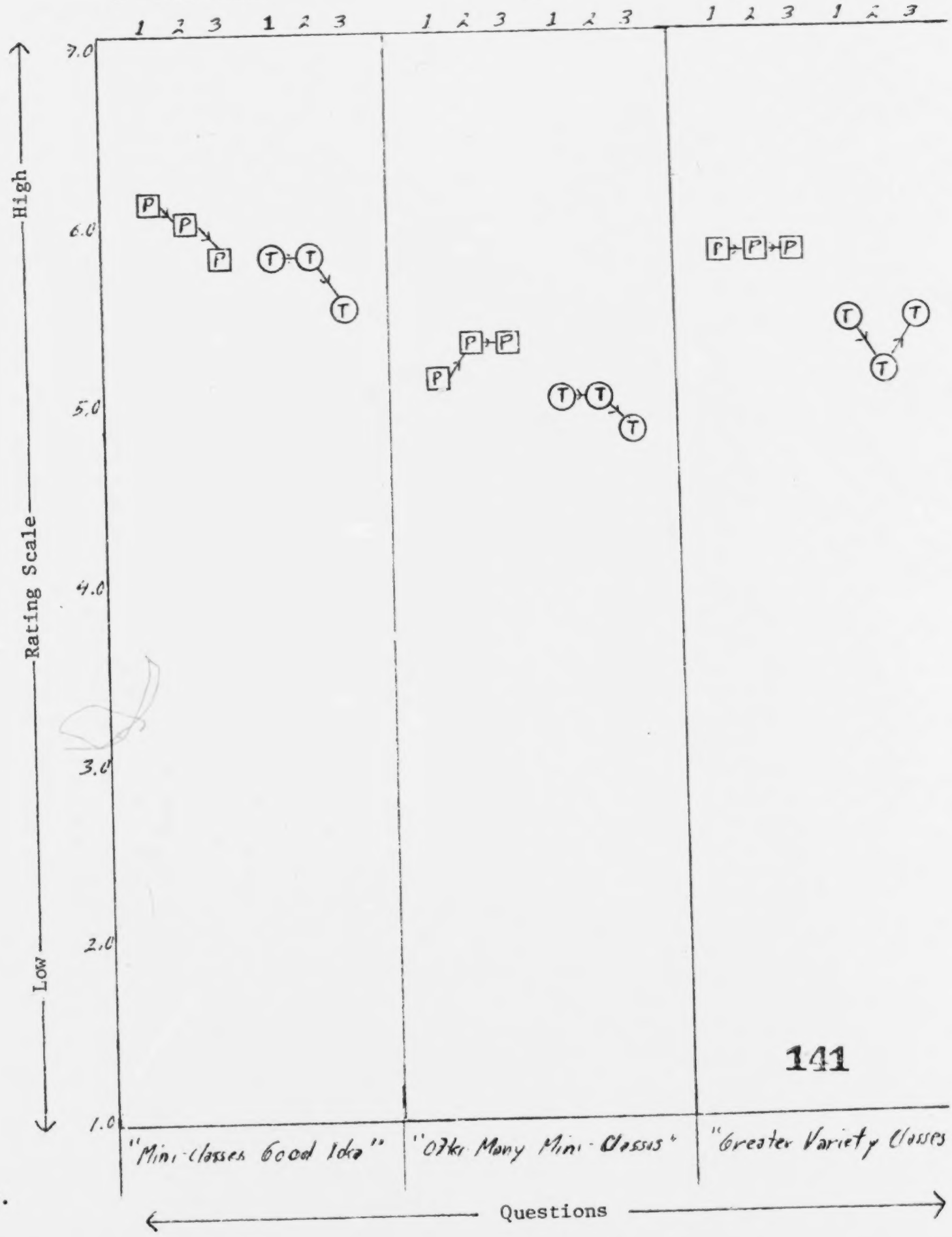
PERSHING COUNTY HIGH SCHOOL MINI-CLASS PROJECT - FALL, 1970

Profile Chart #3 - PUPILS/TEACHERS RESPONSES RELATIVE TO:
(1) Mini-Classes Good Idea,
(2) Offer Many, (3) Offer Greater Variety.

Explanations: 1 = Pre-Term Questionnaire
2 = Mid-Term "
3 = Post-Term "

[P] = Pupils

(T) = Teachers



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IV. DISCUSSIONS OF CHARTS

Following are some observations relative to the responses recorded on the previous Profile Charts.

Profile Chart #1

1. Classes most closely associated with physical skills or dexterity generally rated highest in student popularity.

2. With few exceptions (4) among the 21 classes, the responses by the students and teachers for "like (this) class" and "teacher-pupil planning" appear to have high correlation.

3. Factors not revealed in this chart or incorporated in the questionnaire had strong influences on the following classes - affirmative and negative:
   Preventive Farm Mechanics
   Current Events
   Photography
   How to Get a Job
   These factors must be identified for future planning purposes.

Profile Chart #2

1. With only minor exceptions in the first two columns, both teachers and pupils responded similarly in the four questions charted.

Profile Chart #3

1. The high degree of correlation at relatively high rating levels in the column "mini-classes good idea" (1) speaks for that semester's efforts and (2) portends well for planning future mini-classes.

2. As might be expected, there is a high level of agreement in the other two columns - "offer many mini-classes" and "offer a greater variety".

V. OBSERVATIONS

If this reporter may be permitted, he offers the following observations. They result from having compiled questionnaire results and preparing the charts.

A. Pershing County High School should feel highly encouraged to further pursue the mini-classes concept.

B. The project committee must identify as soon as possible those "hidden" factors which contributed to the continued successes of some classes as well as failures of others - teacher attitudes, administrative leadership, personalities, facilities, scheduling, class lengths, accessibility of support materials/equipment, competition with regular classes, etc.

C. It seems that some of the classes do not lend themselves to the rigid pattern of session numbers and regularity of sessions.

D. A much simpler questionnaire could be prepared for use during the second year of the project. Both students and teachers would be more cooperative and the responses might be more accurate - especially if they participate in preparing the short questionnaire.

E. An attitude or impact response from the students' parents upon completion of the Spring, 1971, term would be extremely valuable in assessing the public's support for the project - an important factor.

Other observations as well as findings will be incorporated in the Center's second report. It will statistically treat the questionnaire's results and other student data previously stored at the Center.

APPENDIX 4

COLLECTION FORMS FROM STUDENT INFORMATION SYSTEM

STUDENT ENTRY DATA

(NISE)

WN-REC

LOVELOCK, NEVADA

WESTERN NEVADA REGIONAL EDUCATION CENTER, AN ESEA TITLE III PROJECT

10/69

LAST NAME	FIRST NAME	M.I.	SEX	ETH

1 BLACK
2 INDIAN (AM.)
3 ORIENTAL
4 SPANISH AM.
5 WHITE
6 OTHER

STREET ADDRESS OR P.O. BOX OR RURAL ROUTE AND BOX

CITY-TOWN	CO.	LAST 3 ZIP #

BIRTHDATE

MO.	DAY	YR.

STUDENT NUMBER

CO.	SCH.	GR.	T.	TEMP. NO	PERM. NO.

PRESENT DATE

MO.	YR.

1/15

OPTICAL SCANNING CORPORATION FORM 6347

WN-REC LOVELACK, NEVADA

HOME DATA

(NISE)

WESTERN NEVADA REGIONAL EDUCATION CENTER (ESEA TITLE III)

YOUR LAST NAME	YOUR FIRST NAME

MALE PARENT IN HOME

LAST NAME

RELATIONSHIP OF MALE PARENT IN HOME

- FATHER
- STEPFATHER
- OTHER

OCCUPATION OF MALE PARENT IN HOME

- PROFESSIONAL
- SELF-EMPLOYED
- SKILLED LABOR
- UNSKILLED LABOR
- UNEMPLOYED

FEMALE PARENT IN HOME

F M T

LAST NAME

RELATIONSHIP OF FEMALE PARENT IN HOME

- MOTHER
- STEPMOTHER
- OTHER

OCCUPATION OF FEMALE PARENT IN HOME

- PROFESSIONAL
- SELF-EMPLOYED
- SKILLED LABOR
- UNSKILLED LABOR
- UNEMPLOYED

ACTIVE MILITARY DUTY

- YES
- NO

LANGUAGE SPOKEN AT HOME

- ENGLISH ONLY
- ENGLISH & OTHER
- OTHER ONLY

PRESENT DATE

MO YR

STUDENT NUMBER

CO	SCH	GR	T	TEMP. NO.	RESERVED

146

LOVELOCK, NEVADA

PERSONAL DATA

YOUR LAST NAME | YOUR FIRST NAME

GRADE | GRADE | GRADE | GRADE | GRADE

GRADE | GRADE | GRADE | GRADE

GRADE | GRADE | GRADE

WESTERN NEVADA REGIONAL EDUCATION CENTER (ESEA TITLE III)

MOST USED TRANSPORTATION TO SCHOOL

- WALK OR BIKE
- FAMILY CAR
- OWN CAR
- SCHOOL BUS
- OTHER

KNOWN LEARNING OR ACTIVITY LIMITATION*

- YES
- NO

IF YES, TYPE

- HEARING
- VISION**
- LOCOMOTIVE
- OTHER

HOW KNOWN

- PARENT REPORT
- PROFESSIONAL EXAM.
- SCHOOL OBSERVATION
- STUDENT REPORT

Distance From School MILES

TIME TO SCHOOL MINUTES

NOON LUNCH - MOST OFTEN

- SCHOOL HOT LUNCH
- SCHOOL BOX LUNCH
- NONE
- OTHER

IF HOT LUNCH, PAID BY

- SCHOOL
- FAMILY/SELF

PRESENT DATE

MO. | YR.

STUDENT NUMBER

CO. | SCH. | GR. | T. | TEMP. NO. | RESERVED

UTILITY FORM 6378

OPTICAL SCANNING CORPORATION

CURRICULUM FACTORS

AND

STUDENT SUCCESS:

READING IN HUMBOLDT COUNTY

Theodore G. Brough

June 15, 1971

WESTERN NEVADA REGIONAL EDUCATION CENTER

220 Main Street
P. O. Box 421
Lovelock, Nevada 89419

Tel. (702) 273-2631

SUMMARY

A new Reading Program in Humboldt County involving in-service training of teachers is apparently successful. Teachers who received in-service training in reading have students who are achieving at close to national norms, gaining roughly four months in mean scores on both Word Meaning and Paragraph Meaning in a 4.5 month period, while a comparable group of teachers without that training have students gaining roughly three months in a 4.5 month period. However, in the area of Word Study Skills, the untrained teachers have students who are achieving a nine month gain in the 4.5 month period, while the Workshop-trained teachers have students who gain about 5.5 months in the same 4.5 month period. Minority students, performing roughly one year below the norm at the 3rd and 5th grade level (though normally at 1st and 2nd grade level) make their greatest gains (about 1.5 months in 4.5 months) under the non-trained teacher, while minority students of the Workshop-trained teachers gain roughly 0.5 of a month in the same period.

Analyzing the student and teacher background variables reveals that a teacher's self-rating of knowledge of modern reading techniques is a good indicator of successful teaching (as measured by student gains). In general, the Workshop-trained teachers seem to be most successful with minority students who have lunch at school, while the non-trained teachers have more success with minority boys from English-speaking homes with professional or self-employed fathers. In general, the most successful teachers from both groups are younger and well-educated.

A new Reading program was instituted in Humboldt County Schools, starting with an in-service program in the Summer of 1970. Five elementary school teachers were chosen to attend a workshop (Group I), five others volunteered to attend (Group II), and a group of five others not attending the workshop were chosen as controls (Group III).

These teachers subsequently taught reading to 1st, 2nd, 3rd and 5th graders in the school year 1970-71. In November, pre-tests (Stanford Achievement reading sub-scores) were given to the students involved and post-tests were given in March 1971. The Mean Gain Scores for each group of students in each classroom, at each grade level for each of the three types of teachers described and for minority students within each teacher group were computed.

RESULTS:

Table 1 shows the Mean Gain performance of a random sample of 12 students for each of the three types of teachers. Table 2 shows the significance level for the differences between these means (if any). Table 3 summarizes the differences between these student performances, indicating the significant differences when they occur.

TABLE 1

MEAN GAIN PERFORMANCES OF STUDENTS

Teacher Group	Grade Level	Class Group	N	Mean Stanford Achievement Sub-Score Gain (mos.) Word Mean.	Para. Mean.	Word St.Skills
I	1	04	12	6.34	4.83	4.17
	2	05	12	6.62	1.00	7.87
	3	01	10	6.30	4.10	6.80
	3	02	12	6.50	8.82	8.82
	5	03	12	3.08	-5.66	-
	Means*:			5.61(59)	2.76(59)	6.72(47)
II	1	10	9	6.67	10.68	6.00
	2	06	8	4.75	4.75	6.62
	3	07	11	5.28	1.64	7.09
	3	08	11	3.18	3.82	0.27
	5	09	12	2.08	2.00	-
	Means*:			3.09(46)	4.37(46)	4.41(34)
III	1	12	11	4.09	5.00	5.55
	2	11	12	9.17	4.66	13.25
	3	14	12	3.77	5.84	8.25
	5	13	11	-4.09	-3.82	-
	Means*:			3.37(46)	3.02(46)	9.12(35)

*Means for gains over 4.5 months for all students within each teacher type.

TABLE 2

COMPARISONS OF MEAN GAIN SCORES FOR INDIVIDUAL CLASSROOM GROUPS AND FOR EACH TEACHER TYPE

Comparison	Grade Level	Significance of Difference Between Means, for Stanford Achievement Sub-Score: Word Mean.	Para. Mean.	Word St. Skill
I- II	1	-	$<.02$*	-
	2	-	-	-
	3	$<.10$	$<.01$	$<.01$
	5	-	-	-
	Group Mean	$<.20$	-	$<.10$
I-III	1	$<.20$	-	-
	2	-	-	-
	3	-	-	-
	5	$\sim.20$	-	-
	Group Mean	$<.05$	-	-
II-III	1	-	$<.02$	-
	2	$<.10$	-	-
	3	-	-	$<.05$
	5	-	-	-
	Group Mean	-	-	$<.20$

* Significance level of difference between means, computed by Box method (t test using estimated standard deviation and S.E.). See Box, George E. and Norman R. Draper, Evolutionary Operation (New York: John Wiley and Sons), pp. 44, 133. A discussion of the method is included in Appendix A of this report.

TABLE 3

SUMMARY OF DIFFERENCES BETWEEN MEAN GAIN PERFORMANCES FOR STUDENTS TAUGHT BY THE 3 TYPES OF TEACHERS

GRADE LEVEL	Stanford Achievement Measure: Word Meaning	Paragraph Meaning	Word Study Skills
1	II > I * III	II * III > I	II > III > I
2	III * I > II	II > III > I	III > I > II
3	I * II > III	I > III > II	III > I > II
5	I > II > III	II > III * II	
Overall	I * III > II	II > III > I	III > I * II

This notation is to be read (using Word Meaning, Grade Level 1 as an example) as follows:

The group taught by Teacher Type II had a greater gain than the group under Teacher Type I and this group had a greater gain than the group taught by Teacher Type III, the latter difference approached significance at the level shown in Table 2.

An examination of Table 1 reveals that Teacher Type I is getting the best student performance in Word Meaning, Teacher Type II is getting the best performance in Paragraph Meaning (although all student groups perform below the normal gain level of 4.50 months), and that Teacher Type III is getting the best performance in Word Study Skills. However, the teachers of Type I have students who exceed the expected norm performance in two out of three areas, while the teachers of Type II have students who approach the expected performance in two areas (but not the third), and the teachers of Type III have students who exceed the norm in only one area: Word Study Skills.

The summarization of the differences between the groups (Overall line in Table 3) shows the following:

Teacher Group I has students that <u>significantly</u> outperform the students of Groups III and II in Word Meaning, and that <u>significantly</u> outperform the students of Group II in Word Study Skills (the students of Group III also <u>significantly</u> outperform the students of Group II in Word Study Skills).

However, in <u>no case</u> do the students of Group II and III outperform the students of Group I <u>significantly</u>. Therefore, we could say that the Group I teachers are from an overall point of view getting the best performance from their students.

However, the observed differences may be due to differences between groups at the beginning (Fall 1970), that is, the three groups may not have been performing at the same level to begin with, in which case one

would expect the worst performing group to gain the most and the best performing group the least. Table 4 indicates that there were indeed differences between groups at the beginning. Among the third graders, Groups III and I both outperformed Group II significantly in both Word Meaning and Paragraph Meaning. From this observed difference one would expect Group II to exceed both groups I and III significantly. However, this does not happen except in one case (II > III for Word Meaning), but then not significantly. Therefore, the significant differences observed may be attributable to teaching effects.

TABLE 4

MEAN PERFORMANCES FALL 1970 (Pre-Test)

Mean Performances for Each Group:

GRADE LEVEL	I		II		III		Signif. Level
	Word Mean.	Para. Mean.	Word Mean.	Para. Mean.	Word Mean.	Para. Mean.	
1st	1.27	1.42	1.27	1.25	1.38	1.42	n.s.
2nd	2.25	2.49	2.04	2.05	2.22	2.40	n.s.
3rd	2.99	2.90	2.39	2.37	3.21	3.16	III > II $p < .01$ I > II $p < .05$
5th	6.04	6.07	6.26	5.72	6.30	6.64	n.s.

Minority Students

For minority students, however, the performance pattern is different. These minority students are far from achieving the gains that are expected nationally. They gained from less than one-half a month to about two months over a 4.5 month period, regardless of the teacher type. In fact, teachers of Type II consistently get the best performance from their students. In examining the overall summary in Table 5 we find that in no case do the minority students of Teacher Type I significantly exceed the performances of the students of Teacher Types II and III. In fact, the students of Teacher Type III always exceed the performances of the students of Teacher Types I and II, the differences between Teacher Types III and I being significant.

Again, these observed differences may be due to differences in preparation as indicated by performance level on the pre-test. The pre-test performance data for minority students shown in Table 6 leads one to expect the minority students under Teacher Types I and II to make the greatest gains when compared with students under Teacher Type III. However, this does not happen: the students under Teacher Type III gain the most. We might conclude, then, that the observed differences between teachers to be a possible function of teaching method.

TABLE 5

MEAN GAIN PERFORMANCES BY MINORITY STUDENTS

TEACHER TYPE	Mean Stanford Achievement Sub-Score Gain: Word Meaning	Paragraph Meaning	Word Study Skills
	Spanish-American		
I	0.87(4)	0.02(4)	0.16(3)
II	0.47(3)	-1.33(3)	-1.53(3)
III	1.80(2)	0.60(2)	1.35(2)
	Indians		
II	-0.01(9)	0.52(9)	0.29(9)
	All Minorities		
I	0.87(4)	0.02(4)	0.16(3)
II	0.11(12)	0.056(12)	0.60(12)
III	1.80(2)	0.60(2)	1.35(2)
	SUMMARY:		
	Significance of difference between group means, all minorities:		
Comparison			
I- II	~.20	<.001	<.001
II-III	-	-	-
I-III	~.20	<.001	<.05
OVERALL SUMMARY:	III > I > II	III > II > I	III > II > I

TABLE 6

MEAN PERFORMANCE FOR MINORITY STUDENTS IN EACH GROUP

GRADE LEVEL	I Word Mean.	I Para. Mean.	II Word Mean.	II Para. Mean.	III Word Mean.	III Para. Mean.	Signif. Level
1st	1.20	1.50	1.20	1.20	-	-	n.s.
2nd	2.20	2.40	-	-	1.90	1.83	n.s.
3rd	2.35	1.95	2.33	1.83	3.40	3.45	III > II $p<.05$ III > I $p<.05$
5th	4.10	5.30	5.73	5.63	-	-	n.s.

Other Teacher Variables

The three groups of teachers (5 in each group) were administered a self-evaluation questionnaire to measure their awareness of modern techniques of teaching reading (see Appendix B for the questionnaire). These evaluation instruments were scored for each participant and the mean performance for each group was computed. In addition, each teacher was rated by a supervisor on an eagerness scale of 1 to 15. Those teachers who attended the summer workshop filled out a questionnaire concerning the workshop (Appendix C), each response to that questionnaire being scaled on a 1 to 7 scale.

Table 7 summarizes the mean ratings resulting from the use of some of these instruments, together with the mean 4.5 month gains for the students taught by these teachers.

Table 8 shows the correlations between each of these measures for the individual teachers in the workshop and the mean gain performances of their students. Only one pair of measures is significantly correlated: Paragraph Meaning Gain and Word Meaning Gain. Also, the Word Meaning Gain for students is clearly related to the Workshop Rating and one's self-rating. The supervisor's eagerness rating does not seem to have any relationship to student performance. The Mean Eagerness rating for each of the three groups does follow the Mean Self-Evaluation Rating and the Mean Student Performance Gains for the combination of Word Meaning and Paragraph Meaning. Other performance measures do not follow these ratings. The Workshop Mean Rating goes in the opposite direction of the Self-Evaluation Rating and the Eagerness Rating.

TABLE 7

MEAN MEASURES (RATINGS) OF TEACHERS AND STUDENT PERFORMANCE

TEACHER TYPE	WORKSHOP MEAN RATING	EAGERNESS MEAN RATING	SELF-EVALU-ATION	Student Performance Gain (Mos.) Word Mean.	Para. Mean.	Word St. Skills	Mean of 3 Gains	Mean of Word & Para. Gain
I	66.2	9.8	84.36	5.61	2.76	6.72	4.97	4.18
II	88.9	5.0	78.62	3.09	4.37	4.41	3.91	3.68
III	-	1.4	73.32	3.37	3.02	9.12	4.82	3.19

ERIC

TABLE 8

SPEARMAN-RANK CORRELATIONS[+] BETWEEN TEACHER RATINGS OF WORKSHOP AND STUDENT PERFORMANCE (10 Teachers)

	WORKSHOP RATING	EAGERNESS RATING	SELF-RATING	WORD MEAN. GAIN	PARA.MEAN. GAIN
WORKSHOP RATING	1.00	.295	.067	.334	.206
EAGERNESS RATING		1.00	-.264	-.018	.062
SELF-RATING			1.00	.224	-.079
WORD MEANING GAIN				1.00	.521**
PARAGRAPH MEANING GAIN					1.00

[+] All Ratings and Scores were converted to rank order and Spearman-Rank Correlations were computed.

** Significant at $p \sim .10$.

The lower teachers rate themselves (or are rated by supervisors) the higher they rate the workshop. This might reflect a knowledge of their weaknesses and, hence, a welcoming of new training. In any case, the teachers who volunteered to take reading workshop training rated the workshop higher than those that were selected by supervisors.

Multivariate Analysis: Student and Teacher Interactions

To get a more complete picture of the relationships between student performance in the reading programs and teacher and student backgrounds as well as teacher preparation in reading, additional measures of students and teachers were obtained. Background information on each teacher was obtained from each teacher (Appendix D) and additional certification information was obtained from the Nevada State Department of Education Teacher's File.* Additional background information on each student involved was obtained from the WN-REC Student Information System Printout: Partial Student Profile.

The variables chosen for a step-wise multivariate analysis are indicated in Table 9. Additional information on the method used is given in previous WN-REC reports.** The coding used is indicated in Table 9. The teachers' rating of the workshop is not included, since all teachers were not in the workshop (5 control teachers were selected for comparison with the 10 workshop teachers). The students

*Department of Education, Nevada, Total Teachers, October 17, 1969, 170 pp., and Certified Teachers, December 23, 1970, 136 pp.

**Brough, et al., Analysis of Experimental Curricula: Mini Classes at Pershing County High School, pp. 19 ff., June 1, 1971.

Brough, T. G., Student Placement in Mathematics Based on Previous Achievement: An Example of a Step-Wise Multiple Linear Regression, March 1970.

TABLE 9

VARIABLES USED IN MULTIVARIATE ANALYSIS

ABBREV.		
ETH 1, ETH 2	Ethnic Group	00 = White, 01 = Negro, 11 = Spanish, 10 = Indian
SEX	Sex	0 = Male; 1 = Female
LANG	Language at Home	0 = English; 1 = English & Other; 2 = Other Only
MPAR	Male Parent	0 = Natural; 1 = Step-, Foster, Other
OCC	Male Parent Occupation	5 = Professional; 4 = Self-employed; 3 = Skilled; 2 = Unskilled; 1 = Unempl.
FPAR	Female Parent	0 = Natural; 1 = Step-, Foster, Other
TRAN	Transportation Type	0 = Walk, Bike, Fam. Car, Own Car 1 = Bus or Other
LLIM	Learning Limitations	Number listed (0 to 4)
LNCH 1,LNCH 2	Lunch Type	11 = Hot School; 01 = Box; 00 = None; 10 = Other
PARM	Parent Missing	0 = No; 1 = Yes
TCHM	Teacher's Major	0 = Education; 1 = Other
DEGR	Degree Level	1 = No Degree; 2 = AB; 3 = AB+
RDSH	College Training in Reading	No. of semester hours
EXP	Teaching Experience	Years of experience
AGE	Age	In 10 yr. intervals: 1 = 21-30; 5 = 61-70
EAGR	Eagerness Rating	15 = highest; 1 = lowest
PAM 2	Para. Mean.,Fall '70	Grade Equivalents (no decimal)
PAGN	Para.Mean.Gain	Gain Score (GE + 5.0, no decimal)
WDGN	Word Mean. Gain	Gain Score (GE + 5.0, no decimal)
SAGE	Student Age	Years and tenths (no decimal)
EVAL	Teacher's Self-Eval.	Raw Score
SAL	Teacher's Salary	Thousands and tenths (no decimal)
TIME	Time to School	Minutes
WDM 2	Word Mean.,Fall '70	Grade Equivalents (no decimal)

(and their teachers) were gathered into the three groups discussed previously and correlations between each of the variables listed in Table 9 and the two student performance measures: Word Meaning Gain and Paragraph Meaning Gain were computed. The results are shown in Table 10.

Only a few of the variables are significantly correlated with student performance. The most common ones are teacher variables: Teacher's Major, Teacher's Experience, Teacher's Age, Teacher's Salary (these are usually negatively correlated with student performance regardless of teacher type). Other teacher variables that are significantly correlated with student performance are: Teacher's Eagerness Rating and Teacher's Self-Evaluation. The former variable is correlated positively with student performance for the workshop teachers (Groups I and II) but negatively correlated for the non-workshop teachers. The low ratings given the latter teachers, coupled with this negative correlation, indicates a serious mis-reading of teacher capabilities by the supervisors involved. The significant correlations of Teacher's Self-Evaluation and student performance (Group II has the highest correlations) may indicate true differences in teachers' self-analysis of teaching requirements. The differences in correlation sign (negative for Word Meaning for Group I and positive for Group II) indicate some perceptual differences between teacher types.

TABLE 10

CORRELATIONS BETWEEN VARIABLES: STUDENTS IN 3 TEACHING GROUPS

VARIABLE	I - Workshop Chosen		II -W'shop Volunteer		III - Non-Workshop	
	Word Mean. Gain (N=41)	Par.Mean. Gain (N=41)	Word Mean. Gain (N=42)	Par.Mean. Gain (N=42)	Word Mean. Gain (N=39)	Par.Mean. Gain (N=39)
ETH 1 +	.146	.037	.169	.260	.330*	.105
ETH 2	.146	.037	.182	.122	.330*	.105
SEX +	.025	-.057	.075	.021	-.447**	-.210
LANG +	-.133	-.213	.169	.177	.256	.090
MPAR +	.101	.038	.183	.120	-.081	-.096
OCC +	.043	.0044	-.011	.035	.155	-.070
FPAR+	-.035	-.044	.126	.172	0	0
TRAN +	.025	.066	.229	.042	-.148	.125
LLIM	.024	.071	-.246	-.189	.262	.085
LNCH 1+	.199	.136	.201	.170	-.053	-.087
LNCH 2+	-.318*	-.180	-.034	.084	-.051	.020
PARM +	-.025	.043	.049	.111	.111	.090
TCHM +	-.556**	-.510**	-.372*	-.298*	0	0
DEGR +	-.17	-.262	.115	.161	-.430**	-.201
RDSH +	-.017	-.235	.054	.238	-.116	-.057
EXP +	-.492**	-.434**	-.418**	-.366*	-.356*	-.300
AGE +	-.415**	-.265	-.379*	-.261	-.341*	-.318*
EAGR +	.359*	.220	.336*	.412**	-.509**	-.435**
PAM 2 +	.047	-.212	-.144	-.060	-	-.418**
PAGN	-	1.000	-	1.000	-	1.000
WDGN	1.000	-	1.000	-	1.000	-
SAGE +	.083	-.080	-.085	-.038	-.396**	-.238
EVAL	-.289*	-.146	.305*	-.380*	-.191	-.027
SAL	-.250	-.323*	-.243	-.230	-.469**	-.389*
TIME +	.153	.107	.124	-.014	-.122	-.0090
WDM 2 +	-	-	-	-	-.394*	-

* p $<$ .05, ** p $<$ .01 + used in final regression equations

A step-wise multiple linear regression analysis was performed with the variables listed in Table 9, utilizing the IBM 1130 computer located at the McKenzie Construction Company offices, Sparks, Nevada. The resultant Beta weights and relative contributions of each variable are shown in Table 11. The resultant equations are shown in Table 12.

The results of this analysis show different leading variables for predicting Word Meaning Gain scores for each teacher type. For Example: Ethnicity (Spanish or Indian), Time to School, and Lunch Type (Cafeteria or Box Lunch), along with Teacher's Major are the important contributors to Word Meaning Gain for the students of Teacher Type I. The combination of Ethnicity, Time to School and Lunch points to minority students transported a relatively great distance to school as the ones that perform more positively under Teacher Type I. The Teacher's Major variable enters negatively, indicating that the teacher with an Education major gets better performance from students than does a teacher with other degree majors. On the other hand, Teacher's Experience and Degree Level, along with Lunch Type (hot lunch or other better than box lunch or none) and previous placement in the Word Meaning sub-test are the major predictors for Word Meaning gains for the students of Teacher Type II. The previous placement in Word Meaning follows in the "right" direction, that is, the lower the previous placement, the higher the gain score. Of the teacher variables, the higher the degree level, the greater the student's gain, but the more experienced the teacher, the less the student's gain. For the students of Teacher Type III, the leading prediction variables for Word Meaning gain are: Sex (boys react positively), Father's Occupation, Missing Parent, and

TABLE 11

BETA WEIGHTS FOR REGRESSION EQUATIONS FOR PREDICTING WORD MEANING GAIN AND PARAGRAPH MEANING GAIN FOR STUDENTS

(Multiple-Linear Regression Beta Weights for variables in the Regression Equations and percent of additional variability accounted for as the variable enters the equation, p .05.)

	GROUP I				GROUP II				GROUP III			
	Word Mean. Gain		Para. Mean. Gain		Word Mean. Gain		Para. Mean. Gain		Word Mean. Gain		Para. Mean. Gain	
VARIABLE	Beta	%	Beta	%	Beta	%	Beta	%	Beta	%	Beta	%
MPAR	.08	0.6										
OCC			-.10	1.0					-.24	2.2	-.28	1.2
TRANS									.41	5.0	.24	3.0
LNCH 1	.24	1.6									.06	3.8
LNCH 2	-.18	2.9	.11	0.8	.19	6.0	.27	3.3			-.20	1.9
PARM	-.07	0.5	.12	1.7			.26	3.3				
DEGR									.22	4.4	.21	3.1
RDSH					.75	4.4			-.28	2.8	-.48	3.6
EAGR	.43	2.0	.77	4.4					.80	2.1	.60	1.0
PAM 2			-.58	10.2			.56	17.0			-1.05	18.9
TIME	.11	3.2	.09	0.9			-.26	7.6			-.25	2.2
SAGE			-.33	1.5			-.14	2.2	.19	1.7	.19	1.3
ETH 1	.50	4.4	.22	0.8	-.19	0.9					1.10	2.8
SEX									.58	6.6		
LANG	-.54	1.9	-.36	3.1			-.08	0.6	-.24	7.8		
EXP									-.33	3.2		
AGE					-.43	17.4			-.84	1.0		
WDM 2	-.35	1.1			.20	1.2						
FPAR					-.78	5.8						
TCHM	-.12	30.8	-.14	26.0			.11	0.8				
CONSTANT	31.95		60.68		53.1		-3.31		-42.9		-9.59	

TABLE 12

FINAL REGRESSION EQUATIONS FOR PREDICTING WORD MEANING AND PARAGRAPH MEANING GAIN SCORES UTILIZING VARIABLES AND BETA WEIGHTS SHOWN IN TABLE 11

WDGN-1 = 31.95 + .08 MPAR − .07 PARM + .11 TIME + .50 ETH 1 − .35 WDM 2 + .24 LNCH 1 − .18 LNCH 2 + .43 EAGR − .54 LANG −.12 TCHM

PAGN-1 = 60.68 + .12 PARM + .09 TIME − .33 SAGE − .10 OCC + .22 ETH 1 + .11 LNCH 2 + .77 EAGR − .58 PAM 2 − .36 LANG − .14 TCHM

WDGN-2 = 53.1 + .75 DEGR − .19 SAGE − .43 EXP + .20 AGE − .78 WDM 2 + .19 LNCH 1

PAGN-2 = -3.31 − .14 TIME + .27 LNCH 1 + 2.6 LNCH 2 + .56 EAGR − .26 PAM 2 − .08 SEX + .11 FPAR

WDGN-3 = − 42.9 − .24 MPAR + .22 PARM − .28 DEGR + .19 TIME − .84 EXP + .41 OCC + .80 RDSH + .58 ETH 1 − .24 SEX − .33 LANG

PAGN-3 = -9.59 − .28 MPAR + .21 PARM − .48 DEGR + .19 TIME + 1.10 SAGE + .24 OCC + .06 TRAN − .20 LNCH 1 + .60 RDSH − 1.05 EAGR − .25 PAM 2

Circled items contribute 1% or less of the variance in the gain scores and can be dropped from the equation. Items in rectangles are common to 3 out of 6 of the equations.

These equations account for 48.1, 50.4, 35.8, 33.8, 62.7, and 42.8%, respectively, of the variability in the gain scores measure.

Language Spoken at Home. The students do best who are boys with professional or self-employed fathers, and who speak only English at home.

When the prediction equations for Paragraph Meaning Gain are examined we find two variables that are common to students from all three teacher types: Previous Performance on the Paragraph Meaning sub-test (students who did well in the fall made the greatest gains), and the Eagerness Rating of the teacher (a positive for Teacher Types I and II, a negative for Teacher Type III). The latter finding again reveals the misreading in rating the Type III teachers. The other leading variables for each teacher type are more or less as described above.

The student performances were further analyzed by separating them into Boys and Girls, and by taking all students together. The correlations between the two performance measures: Word Meaning Gain and Paragraph Meaning Gain and the variables listed in Table 9 are shown in Table 13. Again, the variables having significant correlations with the performance variables are: Teacher's Major, Teacher's Experience, Teacher's Age, and Teacher's Salary (all negatively correlated).

A step-wise multiple linear regression was performed with the variables listed in Table 9 and the student performance variables. Also the performance variable: Word Study Skill Gain was used in a linear regression analysis. The latter analysis was done for only 81 of the students since the fifth grade students did not have Word Study Skill sub-test scores (does not appear in Stanford Intermediate Battery). The results of the regression analysis are given in Table 14 and the resultant regression equations are shown in Table 15.

TABLE 13

CORRELATIONS BETWEEN VARIABLES: 3 STUDENT GROUPS

	B O Y S		G I R L S		A L L		
VAR.+	Word Mean. Gain (n = 64)	Par.Mean. Gain (n = 64)	Word Mean. Gain (n = 58)	Par.Mean. Gain (n = 58)	Word Mean. Gain (n = 122)	Par.Mean. Gain (n = 122)	Word Stdy. Sk. Gain (n = 81)
ETH 1	.106	.166	.214	.124	.157	.147	-.185
ETH 2	.206	.094	.176	.056	.196	.079	-.012
LANG	-.056	-.073	.209	.138	.067	.031	-.160
MPAR	.132	.0095	-.0047	.079	.076	.045	-.150
CCC	.044	.015	.082	.036	.067	.030	.278*
FPAR	.010	.085	.075	.042	.040	.057	-.142
TRAN	.054	.030	.062	.141	.047	.080	-.091
LLIM	-.064	-.080	.033	.106	-.025	-.017	.138
LNCH 1	.372**	.350**	-.092	-.126	.160	.121	-.055
LNCH 2	-.127	.0016	-.133	-.082	-.122	-.034	-.086
PARM	.103	.168	-.059	-.018	.039	.088	-.035
TCHM	-.530**	-.437**	-.211	-.182	-.378**	-.311**	.045
DEGR	-.074	-.032	.178	-.162	-.128	-.100	.011
RDSH	-.021	-.124	.020	-.140	-.0089	-.139	-.0016
EXP	-.418**	-.432**	-.226	-.240	-.336**	-.344**	-.0009
AGE	-.311*	-.344**	-.260*	-.154	-.290**	-.256**	.0097
EAGR	.113	.083	.180	.003	.138	.036	-.013
WDM 2	.020	-.089	-.260*	-.277*	-.141	-	-
WDGN	1.000	-	1.000	-	1.000	-	-
PAGN	-	1.000	-	1.000	-	1.000	-
SAGE	-.0005	-.068	-.176	-.114	-.096	-.100	-.029
EVAL	-.368**	-.244*	.076	-.051	-.194*	-.163	-.136
SAL	-.228	-.320**	-.226	-.223	-.235**	-.278**	-.004
TIME	.158	-.087	-.068	-.0068	.045	.036	-.172
SEX	-	-	-	-	-.079	-.067	.051
PAM 2	-	-	-	-	-	-.202*	-
WDS 2	-	-	-	-	-	-	.082
WSGN	-	-	-	-	-	-	1.000

* $p < .05$, ** $p < .01$

+ All variables used in final regression equation EXCEPT: WDGN, PAGN, WDS2, WSGN.

TABLE 14

BETA WEIGHTS FOR REGRESSION EQUATIONS FOR PREDICTING WORD MEANING GAIN, PARAGRAPH MEANING GAIN AND WORD STUDY SKILLS GAIN FOR STUDENTS

(Multiple-Linear Regression Beta Weights for variables in the Regression Equations and percent of additional variability accounted for as the variable enters the equation, p .05.)

	B O Y S				G I R L S				A L L					
	Word Mean. Gain		Para.Mean. Gain		Word Mean. Gain		Para.Mean. Gain		Word Mean. Gain		Para.Mean. Gain		Word Study Skills Gain	
VARIABLES	Beta	%	Beta	%	Beta	%	Beta	%	Beta	%	Beta	%	Beta	%
ETH 1									.13	1.3			-.11	1.3
ETH 2	.30	3.3	.51	2.7									.19	(0.6)
LANG	-.23	3.6	-.42	7.1					-.12	(1.0)				
MPAR	.11	(0.9)			-.07	(0.5)	-.098	(0.7)						
OCC	.082	(0.6)	.10	(0.8)									.22	7.8
LNCH 1	.30	9.6	.20	8.5	-.19	1.1	.30	5.9	.14	1.9	.092	(1.0)		
LNCH 2			.46	6.6	-.32	9.9	-.31	2.0	-.09	(0.7)				
PARM	.13	1.5									.113	(0.9)		
TCHM	-.39	27.9	-.47	19.1					-.27	14.3	-.09	2.8		
DEGR	.29	2.0	.48	3.2			.19	(0.5)	.23	1.1	.47	1.7	.10	(0.6)
EXP	-.16	5.7					-.53	6.9			-.74	11.8		
EAGR	.21	1.9	.13	3.0	.24	4.0			.30	3.5	.32	2.5		
SAGE	-.14	(1.0)					.22	3.0			-.14	(0.6)		
EVAL	-.28	1.5							-.16	(0.9)	-.13	(0.4)	-.37	1.2
AGE			.37	2.7	-.33	6.7	.28	1.1			.42	3.7		
SAL			-.86	9.1					-.30	5.8			.25	2.4
TRAN					.33	1.2	.45	1.7						
LLIM					.12	1.5	.20	2.8					.19	3.0
WDM 2					-.36	6.7			-.34	(0.9)				
TIME					-.22	1.4	.31	2.1	.10	(0.6)			-.13	2.0
FPAR							.099	(0.6)						
PAM 2							-.60	7.7			-.45	4.6		
RDSH											-.15	(0.9)		
SEX													.13	1.5
CONSTANT	69.51		56.18		83.0		61.8		83.95		65.98		62.57	

TABLE 15

FINAL REGRESSION EQUATIONS FOR PREDICTING WORD MEANING, PARAGRAPH MEANING, AND WORD STUDY SKILL GAIN SCORES UTILIZING VARIABLES AND BETA WEIGHTS SHOWN IN TABLE 14

WDGN-B = 69.51+
+ .082 (OCC)
- [.39 TCHM]
- .14 (SAGE)
+ .30 ETH 2
+ [.30 LNCH 1]
+ [.29 DEGR]
-[.28 EVAL]
-.23 LANG
- .16 EXP
+ [.11 (MPAR)]
+ .13 PARM
+ [.21 EAGR]

PAGN-B = 56.18+
+ .10 (OCC)
- [.47 TCHM]
+ .51 ETH 2
+ [.20 LNCH 1]
+ [.48 DEGR]
+ [.37 AGE]
-.42 LANG
+ [.46 LNCH 2]
+ .13 EAGR
- .86 SAL

WDGN-G = 83.0+
- [.19 LNCH 1]
- .33 AGE
+ .33 TRAN
+ .13 LLIM
- [.36 WDM 2]
- [.07 (MPAR)]
- [.32 LNCH 2]
+ [.24 EAGR]
- [.22 TIME]

PAGN-G = 61.8+
+ [.30 LNCH 1]
+ [.19 (DEGR)]
+ [.22 SAGE]
+ .45 TRAN
- [.60 PAM 2]
+ .20 LLIM
- .098 (MPAR)
- [.31 LNCH 2]
- [.53 EXP]
- [.28 AGE]
+ .31 TIME
+ .099 (FPAR)

Circled items contribute 1% or less of the variance in the Gain Scores and can be dropped from the equation. Items in rectangles are common to 2 out of 3 of the prediction equations for each performance variable.

These equations account for 59.4, 62.9, 32.4, and 33.9%, respectively, of the variability in the Gain Score measures.

WDGN-A = 83.95+ + .13 ETH 1 - .12 LANG
+ .14 LNCH 1 - .09 LNCH 2
- .27 TCHM + .23 DEGR + .30 EAGR
- .16 EVAL - .30 SAL
- .34 WDM 2 + .10 TIME

PAGN-A = 65.98+
+ .092 LNCH 1 + .113 PARM
- .09 TCHM + .47 DEGR - .74 EXP + .32 EAGR
- .14 SAGE - .13 EVAL + .42 AGE
- .45 PAM 2 - .15 RDSH

WDSS-A = 62.57+ + .11 ETH 1 + .19 ETH 2
+ .22 OCC
+ .10 DEGR
- .37 EVAL + .25 SAL
+ .19 LLIM - .13 TIME
+ .13 SEX

Circled items contribute 1% or less of the variance in the Gain Scores and can be dropped from the equation. Items in rectangles are common to 2 out of 3 of the prediction equations for each performance variable.

These equations account for 31.8, 30.9, and 20.3%, respectively, of the variability in the Gain Score measures.

The leading variables that are common to the regression equations predicting Word Meaning Gain are Teacher's Major (a negative common to Boys and to All) and Eagerness Rating of teachers (common to Girls and to All). The variables: Teaching Experience (a negative), Lunch 1 (Hot Lunch or Other students do better than Box or None), Ethnic Group (Spanish and Negro Boys do better than others), and Language (English Only speakers do better) contribute heavily to the variability in performance for boys; Teacher's Age, Pre-test on Word Meaning, and Lunch (Box and Hot Lunch students) contribute in large measure to the variability in girls' scores, although the contributions are negative, that is, they tend to lower Gain Scores. Teacher's Salary contributes heavily (in a negative fashion) to the variability in these Gain Scores for the students overall.

The variables that contribute heavily to the prediction of Paragraph Meaning Gain Scores for all groups are: Lunch (Hot or Other Lunch students do best), performance on the Paragraph Meaning Pre-test (a high score on that test yields a low gain score for girls and for the group overall), Teacher's Major (for boys and overall), and Teacher's Experience (for girls and overall) is a negative--though major--contributor to Paragraph Meaning Gain Scores. However, the Teacher's Age is a significant positive contributor to student Paragraph Meaning Gains for all three groups. Other major contributors to the Gain Scores for boys are: Language Spoken at Home (a negative), Teacher's Salary (a negative), Degree Level, and Eagerness Rating of Teachers. Other variables that make smaller contributions to the prediction (though significant at p .05) are shown in the equations of Table 15.

The prediction equation for Word Study Skills Gain contains Father's Occupation and Learning Limitations as leading predictors, with Time to School (a negative) and Teacher's Salary (a positive) also important. This prediction equation is the least successful in that it accounts for the smallest amount of variability in the performance measure. These results, coupled with the observation that students made their greatest gains in the Word Study Skills sub-score, as well as making the best showing under a Type III teacher (Table 7) leads one to conjecture that the more experienced teachers (higher salaries) are most successful with the traditional methods of teaching reading, such as word attack skills. This is liable to be especially true for students who get support for such study at home (in homes with male parent either professional or self-employed).

APPENDIX A

A SHORT-CUT CALCULATION FOR ESTIMATING THE STANDARD DEVIATION*

This method uses the range (the numerical difference between the largest and the smallest observation in the sample). The range from among a small sample (say, about 10) is multiplied by a factor W, tabled below. The result is the estimate of standard deviation.

TABLE A

Multiply range by W to get Standard Deviation

n	W
2	0.886
3	0.591
4	0.486
5	0.430
6	0.395
7	0.370
8	0.351
9	0.337
10	0.325
11	0.315
12	0.307

Note that for $2 \leq n \leq 10$, $W \sim 1/\sqrt{n}$.

For n larger than, say, 10, the sample should be divided into equal sized random groups of greater than four. The average range of the sub samples is then used to calculate an estimated standard deviation.

*Adapted from George E. Box and Norman R. Draper, Evolutionary Operation (New York: John Wiley & Sons, 1969), pp. 44-46, 132-134, 222.

If equal samples are not possible, then a weighted average of the estimates for the sub-groups is used. The weighting factor is (n - 1) for each estimated standard deviation. Hence, if sub-groups of 8, 4, and 7 were used, then the weighted average estimated standard deviation is:

$$\bar{S} = \frac{(7 \times S_1) + (3 \times S_2) + (6 \times S_3)}{7 + 3 + 5}$$

where S_1, S_2, S_3 have been estimated for the sub-groups of n = 8, 4, and 7 using the range method above.

This weighted mean method should be used with groups numbering between 2 and 10.

This range method with "W" gives an unbiased estimate of standard deviation, while the usual method is slightly biased, but more efficient (needs fewer observations for estimations of a given variance). However, the range method is much quicker. Clearly for sample sizes of up to 100 or so this is a faster technique.

APPENDIX B

To: Selected Staff Members

From: Will Brown

Subject: Evaluation, ESEA Title III

It will be greatly appreciated if you will be so kind as to complete still another form and return to me by Wednesday, March 17. My abject apologies for subjecting you to the plethora of questionnaires which may appear to ask for meaningless information. We hope that something meaningful will emerge from copious statistics being collected; in any event, they are necessary in order to provide base line statistical data for evaluating our reading efforts.

The following form has been developed for our use by Lee Nutting.

Name_____ School_____

Item	Reading Instruction	I have done this regularly (daily - yearly)	I have done this occasion-ally	I have not done this but plan to	I have not done this	Doesn't apply
1.	My reading instruction is geared to meet the normal reading achievement range for my grade level (2/3xC.A.= range) a._____ number of basal reading groups b. basal groups are (permanent-flexible) in nature c. Comments:					
2.	I also group children for: a. sub-skill practice					
	b. Interest and research					
	c. discussion					
	d. (permanent-flexible) Name _____					
3.	Provision is made for frequent re-grouping for sub-skill work					

Item	Reading Instruction	I have done this regularly (daily - yearly)	I have done this occasion-ally	I have not done this but plan to	I have not done this	Doesn't apply
4.	Provision is made for vertical movement of pupils from group to group - level to level					
5.	What criteria is used for grouping?					
	a. standardized tests (Achievement, Intelligence, Survey, Basal) List: _____					
	b. Informal tests (reading inventories, worksheets, etc. List: _____ _____					
	c. Permanent records					
	d. Observation					
	e. Basal grouping is determined primarily on (achievement-intelligence)					
	f. Other (identify) _____ _____					

Item	Reading Instruction	I have done this regularly (daily - yearly)	I have done this occasion-ally	I have not done this but plan to	I have not done this	Doesn't apply
6.	I read to my students					
7.	Students are tested for mastery of sub-skills					
8.	A wide variety of supplement-ary materials are used:					
	workbooks					
	worksheets					
	library books					
	supplement-ary readers					
	audio-vis-ual equip.					
	self-direct-ing and correcting devices for:					
	word attack					
	comprehension					
	critical reading					
	study skills					
9.	Provision is made for maintain-ing a good library or rec-reational read-ing program					
10.	Provision is made for self-expression, self-selection, and extension activ-ities growing out of: group reading					
	indiv. reading					

Item	Reading Instruction	I have done this regularly (daily-yearly)	I have done this occasion-ally	I have not done this but plan to	I have not done this	Doesn't apply
11.	Provision is made in the context areas to adapt material to the reading level of the individual					
	Assignments in the content areas are provided on differential levels					
13.	Classroom arrangement lends itself for meeting both individual and group needs and interests					
14.	Regardless of materials, I provide a sequential development of the various skills in					
	word attack					
	comprehension					
	critical reading					
	study skills					
	appreciation skill					

Item	Reading Instruction	I have done this regularly (daily-yearly)	I have done this occasionally	I have not done this but plan to	I have not done this	Doesn't apply
15.	Provision is made to provide both higher and lower order questions where appropriate					
16.	I see to it that students are aware of the purpose for which they are reading					
17.	Student success is provided for in reading					
18.	I enjoy teaching reading					
19.	I enjoy reading					

APPENDIX C

To: Selected Workshop Participants

From: Will Brown

Subject: Evaluation, ESEA Title III

The following information is needed in order to fulfill statistical requirements for application of a continuation grant for Humboldt County's, Seeking Solutions to Pupil Reading Deficiencies."

The articulation between pupil and teacher performance demands the use of respondents names. However, all reports will be in statistical rather than individual terms. The responses will be compiled by the Western Regional Center located in Lovelock and will be returned to me. No individual responses will be identified.

Please complete and return to me by Monday, March 15 - as time is vital.

Name_____School_____

Please answer the following questions as nearly the same as you answered them at the conclusion of the summer reading workshop as possible - ignoring, as much as you can - subsequent developments and discoveries.

1. Did you study the workshop objectives? YES NO
2. (Circle the best answer) Did the consultants meet all - majority - 50% - less than 50% of the objectives listed?
3. Were you exposed to (circle best answer) many - few - new techniques in teaching? MANY FEW
4. In what area do you feel that you have gained the most knowledge? (i.e.--gross motor development, perceptual motor skills, teaching of phonics, stimulation of reading, comprehension, diagnosis, prescription, writing behavioral objectives, etc.)
5. Did you feel that too many different consultants were involved? YES NO
6. Did you feel that having a number of consultants resulted in (circle your answer) redundancy - a variety of viewpoints - confusion - added interest - additional information - diluted expertise?
7. Were the class sessions well organized? YES NO

8. Do you feel that the workshop was worth your time and effort? YES NO

9. Did you find the classes stimulating? YES NO

10. Would you be willing to attend some in-service sessions during the school day in a school in your area? YES NO

11. Are you planning on passing along knowledge acquired during this workshop to other teachers in your school district? YES NO

12. Do you believe that you were well informed as to the objectives of the workshop, in general? YES NO - Vague information on the workshop

13. Do you honestly feel that you would recommend this same kind of workshop to other teachers if one were scheduled next year? YES NO

The workshop taken as a whole was:

1.	interesting	____:	____:	____:	____:	____:	____:	____:	dull
2.	useful	____:	____:	____:	____:	____:	____:	____:	useless
3.	satisfactory	____:	____:	____:	____:	____:	____:	____:	unsatisfactory
4.	sufficient in information	____:	____:	____:	____:	____:	____:	____:	insufficient in information
5.	complete	____:	____:	____:	____:	____:	____:	____:	incomplete
6.	reliable	____:	____:	____:	____:	____:	____:	____:	unreliable
7.	easy to use	____:	____:	____:	____:	____:	____:	____:	difficult to use
8.	well orginized	____:	____:	____:	____:	____:	____:	____:	poorly organized
9.	clear	____:	____:	____:	____:	____:	____:	____:	ambiguous

The following questions about the workshop should be answered in the present context. How do you feel, now that some months have elapsed since the workshop was held?

1. Did you study the workshop objectives? YES NO

2. (Circle the best answer) Did the consultants meet all - majority - 50% - less than 50% of the objectives listed?

3. Were you exposed to (circle the best answer) many - few - new techniques in teaching? MANY FEW

4. In what area do you now feel that you have gained the most knowledge? (i.e. -- gross motor development, perceptual motor skills, teaching of phonics, stimulation of reading, comprehension, diagnosis, prescription, writing behavioral objectives, etc.)

5. Do you feel that the workshop needs revision and study? YES NO
What was the weakest area of presentation?

6. Are you interested in learning techniques on individualized instruction? YES NO

7. Do you feel that individualized instruction is needed? YES NO

8. Do you believe that each school district should provide a regular program of in-service training for teachers? YES NO

9. If your answer to number 8 is yes, do you believe it should be scheduled for a school day? YES NO

1. Would you be willing to attend some in-service sessions during the school day in a school in your area. YES NO

11. Would you be willing to attend follow-up workshops during the next school term? YES NO

12. If your answer to number 11 is yes, would you attend some that would be scheduled on a Saturday? YES NO

13. Do you feel that your school district should send you to in-service sessions on school time and at school district expense? YES NO

14. Do you think that Humboldt County should conduct a number of one-or-two-day workshops during the next school term, as follow-ups to this session? YES NO

15. Place checks after those areas for which you would like instruction in subsequent workshops.

a. Perceptual-Motor - _____
b. Beginning Reading - _____
c. Word Attack Skills - phonics,
structural, context - _____
d. Vocabulary Enrichment - - - - - - - - - - - - - - - - - - - _____
e. Workbooks - _____
f. Kits or Labs - _____
g. Basic Reading - _____
h. Enrichment Reading - _____
i. Machine Programs - _____
j. Teasting - standardized or informal - - - - - - - - - - - - - _____
k. Remedial Techniques - _____
l. Writing Behavioral Objectives - - - - - - - - - - - - - - - - _____
m. Gross Motor Skills - _____
n. Diagnosis - _____
o. Articulatory Disorders - - - - - - - - - - - - - - - - - - - _____
p. Auditory Disorders - _____
q. When would you prefer the workshop?
After school - 4 p.m. - 6 p.m. - - - - - - - - - - - - - - - _____
Evenings - 7 p.m. - 9 p.m. - - - - - - - - - - - - - - - - - _____
Other time preferred - _____
r. Where would you like the workshop?
At your school - _____
s. Other comments:
You may wish to be more specific about the areas which you checked?

16. Comments on the orginization and usefulness of the workshop.

APPENDIX D

To: Selected Staff Members

From: Will Brown

Subject: Evaluation, ESEA Title III

Will you please be kind enough to answer the following questions and return - to me by Tuesday, March 16? Your answers will be compiled in a list of teacher characteristics.

Thank you for your cooperation!

Name _____ School _____

1. What level of education have you attained? Less than BA _____

   BA _____ BA+_____

2. Number semester hours of upper division or graduate credit in reading?

   _____

3. College major? El. Ed. _____ Sec. Ed. _____

   Subject or field _____

4. Years of teaching experience? _____

5. Age? 21-30_____ 31-40_____ 41-50_____ 51-60_____

   61-70_____

STANDARDIZED TESTING

REGIONAL NORMS

WESTERN NEVADA REGION

8th Grade: Spring 1969, Spring 1970, Spring 1971
6th Grade: Spring 1971
3rd Grade: Spring 1970, Spring 1971
1st Grade: Spring 1971

June 18, 1971

Theodore G. Brough
Martha J. Brough

WESTERN NEVADA REGIONAL EDUCATION CENTER

220 Main Street
P. O. Box 421
Lovelock, Nevada 89419

Tel. (702) 273-2631

ACHIEVEMENT OF STUDENTS IN THE REGION

Stanford Achievement Testing was performed in each county of the region in the Spring and Fall of 1969 (8th grade), in the Spring of 1970 (3rd and 8th grades) and in the Spring of 1971 (1st, 3rd, 6th and 8th grades). The Center has compiled Regional Norms for the results at the 1st, 3rd, 6th and 8th grade levels for the years mentioned. The Mean performances (National percentiles) for each subtest for all of the participating students in the region are compiled in Table 1.

The Mean performances for students in each county school district at each grade level for each sub-test are compiled in Tables 2 through 5.

The appendix contains Regional Distributions and Cumulative Percentages for students participating in the machine-scored (Harcourt, Brace Scoring Service) WN-REC sponsored cooperative. Some discrepancies between the means reported there and the means reported in Tables 1 through 5 can be noted. Approximately 2 to 3 times the number of scores went into the means calculated in Tables 1 to 5 as were included in the computer calculations. Despite this, the differences in the means between the two calculations didn't vary much more than ±.2 GE, although an occasional one exceeds this range. The Standard Deviations listed in the Appendix for each sub-score indicates that the hand-calculations fall within acceptable limits (±2 standard errors brackets the 95% confidence interval).

The areas of weakness exhibited by students in their overall performances (Table 1) are: arithmetic computation and language, the former being consistently the weakest arithmetic score regardless of grade level or the year

Table 1

SEVEN COUNTY SCHOOL DISTRICTS IN
WESTERN NEVADA REGION

Mean Performance for Three Successive Years on
Stanford Achievement Test (Percentiles), 8th Grade Level

	Word Mean.	Para. Mean.	Spel-ling	Word Study Skill	Lan-guage	Arith. Comp.	Arith. Conc.	Arith Appl.	Soc. Stud.	Sci-ence
Spring-Fall, 1969 (overall 43%)	--	47%	46%	--	43%	34%	46%	44%	42%	40%
Spring, 1970 (overall 43%)	--	48%	42%	--	43%	32%	47%	42%	46%	45%
Spring, 1971 (overall 41%)	--	46%	46%	--	39%	27%	44%	44%	42%	41%
Mean Performance, 6th Grade Level										
Spring, 1971 (overall 45%)	48%	46%	44%	--	43%	39%	44%	45%	47%	50%
Mean Performance, 3rd Grade Level										
Spring, 1970 (overall 49%)	41%	48%	50%	58%	52%	44%	50%	--	--	54%
Spring, 1971 (overall 49%)	45%	46%	43%	58%	46%	51%	49%	--	--	51%
Mean Performance, 1st Grade Level										
Spring, 1971 (overall 66%)	60%	58%	70%	76%	68%	63%	--	--	--	--

Table 2

Summary: Mean Grade Performances by County - Western Nevada
Grade 1 (Tested in April, 1971 = 1.8)*
Stanford Achievement Test, Primary I Battery

County (Mean)**		Word Mean.	Para. Mean.	Spelling	Word Study	Vocab-ulary	Arith-metic
A	GE	1.87	1.86	1.89	2.23	2.06	2.08
(62%)	%**	54.2	54.8	55.4	76.6	61.6	66.8
B	GE	1.75	1.66	1.79	1.77	1.85	1.87
(47%)	%	4.40	32.4	49.2	47.6	52.0	54.2
C	GE	2.21	2.06	2.41	2.23	2.10	2.01
(72%)	%	74.6	69.6	85.8	76.6	64.0	62.6
D	GE	1.93	1.93	2.16	2.38	2.22	2.07
(68%)	%	57.8	60.4	72.8	79.6	70.8	66.2
F	GE	2.70	2.60	2.90	3.55	3.70	2.95
(96%)	%	95.0	96.0	94.0	95.0	97.0	96.7
G	GE	2.02	1.91	2.11	2.20	2.03	1.96
(64%)	%	63.2	58.8	68.8	76.0	59.6	59.6
Means:	GE	1.96	1.90	2.12	2.21	2.10	2.01
	%	59.6	58.0	69.6	76.2	68.0	62.6
	N=	855	851	803	856	856	854

* One county tested at grade 1.7 but the performances have been corrected to grade level 1.8.

** National Percentiles

Table 3

Summary: Mean Grade Performances by County - Western Nevada
Grade 3 (Tested in April 1971 = 3.8)*
Stanford Achievement Test Primary II Battery

County (Mean)**		Word Mean.	Para Mean.	Spel-ling	Word Study	Lan-guage	Arith. Comp.	Arith. Conc.	Science Soc. Stu.
A	GE	3.82	3.92	3.84	5.13	3.74	3.79	4.09	3.70
(55%)	%**	50.8	54.8	52.4	68.6	47.6	49.4	67.6	46.0
B	GE	3.44	3.41	3.24	3.88	3.37	2.96	3.42	3.82
(35%)	%	32.4	38.2	24.2	51.6	36.8	15.2	28.8	50.8
C	GE	3.76	3.82	3.90	4.86	3.36	3.86	3.62	3.80
(50%)	%	43.6	50.8	56.0	65.6	36.4	54.8	40.8	50.0
D	GE	3.70	3.81	3.84	4.43	3.66	3.90	3.98	4.15
(54%)	%	46.0	50.4	52.4	58.3	45.2	58.0	62.8	58.5
E	GE	3.92	3.74	3.67	5.15	3.69	3.92	3.66	3.76
(51%)	%	55.2	47.6	42.8	69.0	45.8	59.2	42.4	48.4
F	GE	3.62	4.13	3.78	4.67	4.29	4.59	4.50	5.20
(64%)	%	41.2	60.6	48.8	62.8	59.8	88.7	66.0	84.0
G	GE	3.52	3.52	3.51	3.89	3.65	3.76	3.70	3.40
(43%)	%	36.8	40.4	34.6	51.8	45.0	47.6	40.0	39.0
Means:	GE	3.69	3.69	3.68	4.40	3.70	3.81	3.76	3.84
	%	45.4	45.6	43.2	58.0	46.0	50.8	49.2	51.4
	N =	1060	1061	1058	1060	1058	1056	1061	1059

* One county tested at grade 3.7, but the performances have been corrected to grade level 3.8.

** National Percentiles

Table 4

Summary: Mean Grade Performances by County - Western Nevada
Grade 6 (Tested in April 1971 = 6.8)*
Stanford Achievement Test, Intermediate II Battery

County (Mean)**		Word Mean.	Para. Mean.	Spel-ling	Lan-guage	Arith. Comp.	Arith. Conc.	Arith. Appl.	Soc. Stud.	Sci-ence
A	GE	6.94	6.76	6.52	6.62	6.63	6.70	6.46	6.61	7.39
(49%)	%**	52.8	49.6	44.4	48.4	47.3	48.0	44.4	47.1	60.5
B	GE	6.45	6.40	6.40	6.16	6.02	6.19	6.02	6.52	6.58
(40%)	%	43.0	42.0	42.0	39.2	32.4	33.8	34.4	46.4	47.2
C	GE	6.51	6.48	6.23	6.31	6.80	6.51	6.58	6.04	6.51
(43%)	%	44.4	43.6	39.4	42.2	50.0	44.2	46.8	34.8	44.4
D	GE	6.75	6.78	6.65	6.47	6.06	6.65	6.70	6.68	6.87
(47%)	%	49.5	49.8	47.0	45.4	33.2	47.0	48.0	47.8	51.9
E	GE	5.89	6.58	6.25	6.37	6.30	6.46	6.82	6.63	6.77
(43%)	%	31.8	47.2	39.0	43.4	40.0	42.4	50.4	47.3	49.7
F	GE	7.57	7.85	6.48	7.67	7.40	7.02	8.13	8.55	7.47
(64%)	%	68.8	68.5	43.6	64.7	61.3	57.7	72.1	76.5	62.9
Means:	GE	6.63	6.54	6.52	6.35	6.22	6.50	6.58	6.57	6.78
	%	48.1	45.6	44.4	43.0	38.8	44.0	45.2	47.4	49.6
	N =	1148	1151	1153	1154	1155	1157	1158	1155	1153

* One county tested at grade 6.7, but the performances have been corrected to grade level 6.8.

** National Percentiles

Table 5

Summary: Mean Performance by County - Western Nevada
Grade 8 (Tested in April 1971 = 8.8)*
Stanford Achievement Test, Advanced Battery

County (Mean)**		Para. Mean.	Spel- ling	Lan- guage	Arith. Comp.	Arith. Conc.	Arith. Appl.	Soc. Stud.	Sci- ence
A	GE	7.90	9.20	8.03	7.91	8.03	8.22	7.90	7.82
(41%)	%**	40.0	54.0	43.3	34.2	38.6	40.4	40.0	37.5
B	GE	8.10	8.52	7.97	8.26	8.70	8.55	8.08	8.12
(49%)	%	42.0	46.2	42.7	81.2	48.0	46.2	41.8	39.6
C	GE	8.25	8.81	7.30	7.04	7.80	8.15	7.90	7.87
(38%)	%	45.0	50.2	32.0	22.7	34.0	38.7	40.0	37.8
D	GE	8.63	8.29	7.34	7.51	8.89	8.74	8.26	8.58
(43%)	%	49.3	43.9	32.8	26.2	51.2	49.1	43.6	47.8
E	GE	8.36	8.60	8.27	7.54	8.18	8.32	8.63	8.52
(43%)	%	47.6	47.0	45.7	26.8	41.1	42.4	48.9	47.2
F	GE	7.55	7.27	6.83	6.89	6.85	9.09	7.89	7.40
(32%)	%	33.0	29.7	26.2	21.4	20.5	54.5	39.6	32.0
G	GE	8.06	8.28	7.64	7.33	8.15	8.20	8.16	7.96
(39%)	%	41.6	43.8	38.4	24.3	40.4	41.0	42.6	38.4
Means:	GE	8.30	8.47	7.70	7.56	8.39	8.43	8.09	8.10
	%	46.0	45.7	39.0	27.2	43.9	44.3	41.9	40.7
	N =	1089	1091	1095	1089	1090	1091	1097	1097

* One county tested at grade 8.7, but the performances have been corrected to grade level 8.8.

** National Percentiles

Table 5

Summary: Mean Performance by County - Western Nevada
Grade 8 (Tested in April 1971 = 8.8)*
Stanford Achievement Test, Advanced Battery

County (Mean)**		Para. Mean.	Spel-ling	Lan-guage	Arith. Comp.	Arith. Conc.	Arith. Appl.	Soc. Stud.	Sci-ence
A	GE	7.90	9.20	8.03	7.91	8.03	8.22	7.90	7.82
(41%)	%**	40.0	54.0	43.3	34.2	38.6	40.4	40.0	37.5
B	GE	8.10	8.52	7.97	8.26	8.70	8.55	8.08	8.12
(49%)	%	42.0	46.2	42.7	81.2	48.0	46.2	41.8	39.6
C	GE	8.25	8.81	7.30	7.04	7.80	8.15	7.90	7.87
(38%)	%	45.0	50.2	32.0	22.7	34.0	38.7	40.0	37.8
D	GE	8.63	8.29	7.34	7.51	8.89	8.74	8.26	8.58
(43%)	%	49.3	43.9	32.8	26.2	51.2	49.1	43.6	47.8
E	GE	8.36	8.60	8.27	7.54	8.18	8.32	8.63	8.52
(43%)	%	47.6	47.0	45.7	26.8	41.1	42.4	48.9	47.2
F	GE	7.55	7.27	6.83	6.89	6.85	9.09	7.89	7.40
(32%)	%	33.0	29.7	26.2	21.4	20.5	54.[illegible]	39.6	32.0
G	GE	8.0[illegible]	8.28	7.64	7.33	8.15	8.20	8.16	7.96
(39%)	%	41.6	43.8	38.4	24.3	40.4	41.0	42.6	38.4
Means:	GE	8.30	8.47	7.70	7.56	8.39	8.43	8.09	8.10
	%	46.0	45.7	39.0	27.2	43.9	44.3	41.9	40.7
	N =	1089	1091	1095	1089	1090	1091	1097	1097

* One county tested at grade 8.7, but the performances have been corrected to grade level 8.8.

** National Percentiles

Table 6

Mean Performance by Grade
Small* School Districts vs. Large* School Districts

District Type (Mean)**		Word Mean.	Para. Mean.	Spel- ling	Word Study	Lan- guage	Arith. Comp.	Arith. Conc.	Arith. Appl.	Soc. Stud.	Sci- ence
					Grade 1 (Norm = 1.8)						
Small	GE	1.80	1.73	1.85	1.94	1.95	1.9[illegible]				
(53%)	%**	50.0	41.6	53.0	60.4	56.0	59.0				
Large	GE	2.01	1.94	2.18	2.30	2.14	2.03				
(68%)	%**	62.6	61.2	74.4	78.0	65.6	63.8				
					Grade 3 (Norm = 3.8)						
Small	GE	3.57	3.56	3.40	4.19	3.48	3.53	3.60			3.86
(42%)	%**	38.8	41.2	30.0	55.2	39.6	34.4	46.0			52.4
Large	GE	3.72	3.72	3.73	4.56	3.74	3.88	3.79			3.83
(50%)	%**	46.8	46.8	41.2	59.6	47.4	56.4	49.8			51.2
					Grade 6 (Norm = 6.8)						
Small	GE	6.61	6.53	6.43		6.32	6.22	6.35	6.19	6.49	6.81
(43%)	%**	48.1	45.2	42.6		42.4	38.4	38.5	37.8	45.8	50.8
Large	GE	6.63	6.67	6.54		6.37	6.23	6.53	6.65	6.57	6.77
(46%)	%**	48.3	48.7	44.8		43.4	38.6	44.6	47.5	46.7	49.7
					Grade 8 (Norm = 8.8)						
Small	GE		8.04	8.54		7.94	8.14	8.47	8.48	8.02	8.02
(42%)	%**		41.4	46.4		42.4	38.8	44.9	45.2	41.2	39.6
Large	GE		8.24	8.43		7.65	7.42	8.37	8.42	8.08	8.12
(41%)	%**		44.8	45.3		39.5	25.4	43.6	44.3	41.8	40.9

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* Small = High School Enrollment (9-12) less than 300 students.
Large = High School Enrollment (9-12) 300 students and over.

** National Percentiles.

tested (with the current year's 3rd graders being an exception). The language placement is consistently below paragraph meaning at the 6th and 8th grade levels, but not at the 1st (vocabulary) and 3rd grade levels.

The quartile breaks for regional norms for the Spring 1971 testing sequence can be compared with the National Norm quartile breaks by utilizing the various Directions for Administering pamphlets available for each test. A previous publication in this series: Standardized Testing, Regional Norms*, contains tables that might be useful in computing local quartile breaks for this test series. As a general rule of thumb, the local lower quartile falls the same number of percentile points below the National quartile (25%) as does the Mean. Hence a local mean of 42% would give an approximate value of the lower quartile of 17% (25-8).

Table 6 lists the mean performances for students by grade level when the school districts are grouped into large and small school districts. In this grouping, the students in the larger school districts do better than those in the smaller districts for grades 1, 3, and 6 but that the gap in performance decreases with grade placement until in the 8th grade, the students in the smaller districts outperform those in the larger districts. It should be noted that student performance for the smaller school districts remains virtually constant from the 3rd grade on, while the student performance in the larger districts constantly decreases with increasing grade placement. These results should be compared with the standardized test results observed for the large and small school districts in the eastern part of Nevada**.

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* Brough, T. G. and B. I. Riehm, Standardized Testing, Regional Norms, Western Nevada Region (Lovelock, Nevada: WN-REC, Sept. 26, 1970) pp. 4-12

** Dunsford, G., Standardized Test Results, Eastern Nevada Region (Ely: Eastern Nevada Regional Education Center, Spring 1971).

The overall trend revealed by this year's testing indicates that the children in the schools in the rural counties of western Nevada start out well prepared (above the National Norms) in their early years but that their performance falls off to the norm at 3rd grade, below the norm at 6th grade and well below the norm at 8th grade.

APPENDIX

STANFORD ACHIEVEMENT TESTS, SPRING 1971

REGIONAL DISTRIBUTIONS AND CUMULATIVE PERCENTAGES

First Grade

Third Grade

Sixth Grade

Eighth Grade

PRI 1 GRADE 1 FORM W DATE TESTED 04/71

GE INTERVAL	WORD READING		PARAGRAPH MEANING		VOCABULARY		SPELLING		WORD STUDY SKILLS		ARITHMETIC	
	F	CP	F	CP	F	CP	F	CP	F	CP	F	CP
12.6-12.9												
12.2-12.5												
11.8-12.1												
11.4-11.7												
11.0-11.3												
10.6-10.9												
10.2-10.5												
9.8-10.1												
9.4-9.7												
9.0-9.3												
8.6-8.9												
8.2-8.5												
7.8-8.1												
7.4-7.7												
7.0-7.3												
6.6-6.9												
6.2-6.5												
5.8-6.1												
5.4-5.7							399			1799		
5.0-5.3							399					
4.6-4.9							498			896		
4.2-4.5							397					
3.8-4.1				399			397			794		199
3.4-3.7		699		699		1096		2799		1692		399
3.0-3.3		1298		1098		2093		2493		2988		599
2.6-2.9		3295		3795		3988		4687		4280		3398
2.2-2.5		5387		4186		10278		6575		6669		12989
1.8-2.1		6974		8473		7652		9558		10453		12956
1.4-1.7		15648		19453		10733		10734		8226		7823
1.0-1.3		33 8		14 4		20 5		23 6		19 5		11 3
Q3-PERCENTILE 75		2.19		2.15		2.50		2.55		2.75		2.38
Q2-PERCENTILE 50		1.77		1.72		2.11		2.01		2.11		2.07
Q1-PERCENTILE 25		1.51		1.52		1.64		1.62		1.73		1.77
MEAN		1.92		1.92		2.21		2.12		2.37		2.08
STD DEV		.52		.52		.78		.59		.97		.42
HDRN#00392 N-CNT		391		389		390		387		390		389

STANFORD ACHIEVEMENT TEST PRIMARY
REGION DISTRIBUTIONS AND CUMULATIVE PERCENTAGES
WESTERN NEVADA REC MID 50-1196-

REPORT FROM
HARCOURT BRACE JOVANOVICH
SCORING SERVICE

PRI 2 3 W 04/71

GE INTERVAL	WORD MEANING F	WORD MEANING CP	PARAGRAPH MEANING F	PARAGRAPH MEANING CP	SCIENCE AND SOC STD F	SCIENCE AND SOC STD CP	SPELLING F	SPELLING CP	WORD STUDY SKILLS F	WORD STUDY SKILLS CP	LANGUAGE F	LANGUAGE CP	ARITH COMPUTATION F	ARITH COMPUTATION CP	ARITH CONCEPTS F	ARITH CONCEPTS CP
12.6-12.9																
12.2-12.5																
11.8-12.1																
11.4-11.7																
11.0-11.3																
10.6-10.9																
10.2-10.5																
9.8-10.1																
9.4- 9.7																
9.0- 9.3																
8.6- 8.9																
8.2- 8.5																
7.8- 8.1																
7.4- 7.7	299		199						2499		399				299	
7.0- 7.3					199				3094		499		299		199	
6.6- 6.9	499		299		499				1686		798				399	
6.2- 6.5	798		399		899		1599		2782		1496		299		1198	
5.8- 6.1			698		2497				2575		1093		699		296	
5.4- 5.7	997		2297		4290		2696		3169		1690		897		2795	
5.0- 5.3	1394		2891		3480		2389		1961		2486		2295		2388	
4.6- 4.9	2791		3084		5671		5084		1256		3480		4190		5982	
4.2- 4.5	4984		4376		2356		2171		1853		3371		5179		5767	
3.8- 4.1	6171		4965		5551		4565		2048		5262		7366		4452	
3.4- 3.7	7556		5953		2236		6054		4043		4344		9947		3741	
3.0- 3.3	6837		7138		4531		6638		3332		6438		3921		4032	
2.6- 2.9	4319		4219		4319		4221		2124		3421		3611		5521	
2.2- 2.5	12 8		23 8		17 8		3111		4419		4012		2 1		20 7	
1.8- 2.1	17 5		7 3		7 4		7 3		14 7		7 2		3 1		4 2	
1.4- 1.7	2 1		3 1		6 2		3 1		12 4		1 1				2 1	
1.0- 1.3					1 1				2 1						2 1	
Q3-PERCENTILE 75	4.25		4.50		5.14		4.68		6.15		4.73		4.43		4.76	
Q2-PERCENTILE 50	3.63		3.68		4.13		3.65		4.33		3.78		3.82		4.06	
Q1-PERCENTILE 25	3.08		3.07		3.15		3.03		3.00		3.04		3.41		3.09	
MEAN	3.71		3.83		4.17		3.84		4.53		3.95		3.93		4.02	
STD DEV	.98		1.01		1.19		1.08		1.80		1.21		.79		1.12	
HDRN#00389 N-CNT	389		389		388		389		388		386		384		389	

STANFORD ACHIEVEMENT TESTS — PAGE 1

REGION DISTRIBUTIONS AND CUMULATIVE PERCENTAGES

WESTERN NEVADA REC — NORM MID — PROCESS NO 69-2718-

INT 2 — GRADE 6 FORM X — DATE TESTED 04/71

REPORT FROM HARCOURT BRACE JOVANOVICH SCORING SERVICE

GE INTERVAL	WORD MEANING F	WORD MEANING CP	PARAGRAPH MEANING F	PARAGRAPH MEANING CP	SPELLING F	SPELLING CP	WORD STUDY SKILLS F	WORD STUDY SKILLS CP	LANGUAGE F	LANGUAGE CP	ARITH COMPUTATION F	ARITH COMPUTATION CP	ARITH CONCEPTS F	ARITH CONCEPTS CP	ARITH APPLICATIONS F	ARITH APPLICATIONS CP	SOCIAL STUDIES F	SOCIAL STUDIES CP	SCIENCE F	SCIENCE CP
12.6-12.9											199		299				199		499	
12.2-12.5			199		399				199				599		699		599		399	
11.8-12.1					299				399				498		499		399		998	
11.4-11.7	299		1399		799				399		599				398		798		296	
11.0-11.3	199		697		597				398		399		297		797		1596		1996	
10.6-10.9			1695		396				798						1095		493		1792	
10.2-10.5	399		492		1495				1296		498		1397				692		988	
9.8-10.1	1199		991						793		397				1293		791		1086	
9.4- 9.7	1196		889		992				892		596		1494		990		689		1583	
9.0- 9.3	2094		687		1890				2090		495				1088		1188		1280	
8.6- 8.9	1189		686		486				1085		1394		791		886		985		1677	
8.2- 8.5	3286		2284		1685				1183		1891		2989		1284		1683		1073	
7.8- 8.1	2979		3079		1581				1781		1487		4583		1581		2979		2971	
7.4- 7.7	3773		2472		3178				3077		2984		1272		4278		2573		1165	
7.0- 7.3	3564		4367		3671				3470		1977		3870		1968		2367		1762	
6.6- 6.9	5256		2957		4063				2962		2973		3961		4464		2862		3758	
6.2- 6.5	3544		3850		3554				3855		3966		4052		3054		4055		1750	
5.8- 6.1	3636		2942		3446				2647		6657		4043		3947		4546		2546	
5.4- 5.7	3828		3735		4638				4041		4642		5034		5838		3136		4440	
5.0- 5.3	1819		3527		3827				3332		3832		2022		2625		3229		2730	
4.6- 4.9	3115		2819		2419				2924		3823		3718		3919		3122		3424	
4.2- 4.5	10	8	1812		2913				2817		1514		18	9	2410		2714		2616	
3.8- 4.1	17	6	20	8	15	6			1811		2911		10	5	9	5	20	8	2110	
3.4- 3.7	6	2	7	3	9	3			14	7	7	4	6	3	9	3	11	4	15	5
3.0- 3.3	1	1	5	2	3	1			9	4	6	3	4	1			4	1	6	2
2.6- 2.9			2	1					6	2	6	1	1	1	1	1			1	1
2.2- 2.5															1	1	1	1	1	1
1.8- 2.1	1	1	1	1	1	1			1	1			1	1						
1.4- 1.7																				
1.0- 1.3																				
Q3-PERCENTILE 75	7.89		7.91		7.58				7.65		7.13		7.85		7.62		7.88		8.71	
Q2-PERCENTILE 50	6.74		6.53		6.37				6.30		5.95		6.46		6.31		6.31		6.56	
Q1-PERCENTILE 25	5.61		5.27		5.24				5.00		5.03		5.45		5.35		5.14		5.02	
MEAN	6.78		6.78		6.62				6.50		6.15		6.66		6.68		6.70		6.95	
STD DEV	1.63		2.05		1.94				2.02		1.70		1.82		1.96		2.12		2.43	
HORN=00437 N-CNT	437		*		437				437		437		437		437		437		437	

STANFORD ACHIEVEMENT TESTS
REGION DISTRIBUTIONS AND CUMULATIVE PERCENTAGES
NORM MID PROCESS NO 59-2718-
WESTERN NEVADA REC

REPORT FROM
HARCOURT BRACE JOVANOVICH II
SCORING SERVICE

GRADE 8 FORM X DATE TESTED 04/71

GE INTERVAL	WORD MEANING F	WORD MEANING CP	ADV PARAGRAPH MEANING F	ADV PARAGRAPH MEANING CP	SPELLING F	SPELLING CP	WORD STUDY SKILLS F	WORD STUDY SKILLS CP	LANGUAGE F	LANGUAGE CP	ARITH COMPUTATION F	ARITH COMPUTATION CP	ARITH CONCEPTS F	ARITH CONCEPTS CP	ARITH APPLICATIONS F	ARITH APPLICATIONS CP	SOCIAL STUDIES F	SOCIAL STUDIES CP	SCIENCE F	SCIENCE CP
12.6-12.9			699		1599				199		1099		2399		599		599		499	
12.2-12.5			1099		2597				599		898		1396		1199		1399		1599	
11.8-12.1			2297		1893				1399		1097		2894		3397		2197		3697	
11.4-11.7			2194		3590				1497		1095		2989		1692		3293		2490	
11.0-11.3			4590		2984				1994		1794		1284		3589		5388		2786	
10.6-10.9			3482		2279				3091		1191		1982		3083		2778		3282	
10.2-10.5			5476		4076				4686		1389		2479		4178		2774		3276	
9.8-10.1			1567		869				4878		1587		3275		4071		1169		3470	
9.4- 9.7			1265		1367				870		1384		2169				1667		2464	
9.0- 9.3			1563		3065				2469		2182		2566		3964		1564		1860	
8.6- 8.9			3360		3460				2165		3378		3161				3362		2557	
8.2- 8.5			3954		4154				2961		4873		4956		7857		2256		4553	
7.8- 8.1			3548		3847				3656		4764		5948		3644		2952		2445	
7.4- 7.7			5042		4141				5650		3056		3438		3938		5147		3541	
7.0- 7.3			3633		3334				3041		2851		3132		4131		3138		2535	
6.6- 6.9			2727		4428				4336		6746		4827		3924		5433		3330	
6.2- 6.5			3723		3821				4029		4535		2019		3318		2223		4625	
5.8- 6.1			2216		2114				2722		4727		2615		2112		4120		2217	
5.4- 5.7			2612		2511				2317		4519		3211				1412		1613	
5.0- 5.3			10 8		10 6				1713		1812		11 5		19 9		1910		1810	
4.6- 4.9			17 6		14 5				1910		12 9		8 3		16 5		15 7		12 7	
4.2- 4.5			8 3		5 2				15 7		24 6		5 2		6 3		12 4		10 5	
3.8- 4.1			6 2		4 2				7 5		8 2		3 1		9 2		8 2		10 3	
3.4- 3.7			2 1		3 1				5 4		2 1		2 1		1 1		3 1		5 1	
3.0- 3.3			2 1		1 1				3 3		2 1		2 1		1 1				2 1	
2.6- 2.9			1 1		1 1				8 2		1 1									
2.2- 2.5			1 1								1 1									
1.8- 2.1									5 1											
1.4- 1.7																				
1.0- 1.3																				
Q3-PERCENTILE 75			10.49		10.52				9.98		8.72		10.17		10.38		10.66		10.48	
Q2-PERCENTILE 50			8.28		8.31				7.73		7.25		8.25		8.32		7.98		8.41	
Q1-PERCENTILE 25			6.76		6.77				6.34		6.03		6.86		6.98		6.62		6.58	
MEAN			8.45		8.53				7.92		7.55		8.53		8.54		8.36		8.47	
STD DEV			2.25		2.30				2.28		2.13		2.19		2.16		2.31		2.32	
HORN=00597 N-CNT			586		588				592		586		587		588		574		574	

SOCIAL STRUCTURE AND TRANSPORTATION EFFECTS ON SCHOOL PERFORMANCE WESTERN NEVADA

A SUMMARY

Theodore G. Brough

June 24, 1971

WESTERN NEVADA REGIONAL EDUCATION CENTER

220 Main Street
P. O. Box 421
Lovelock, Nevada 89419

Tel. (702) 273-2631

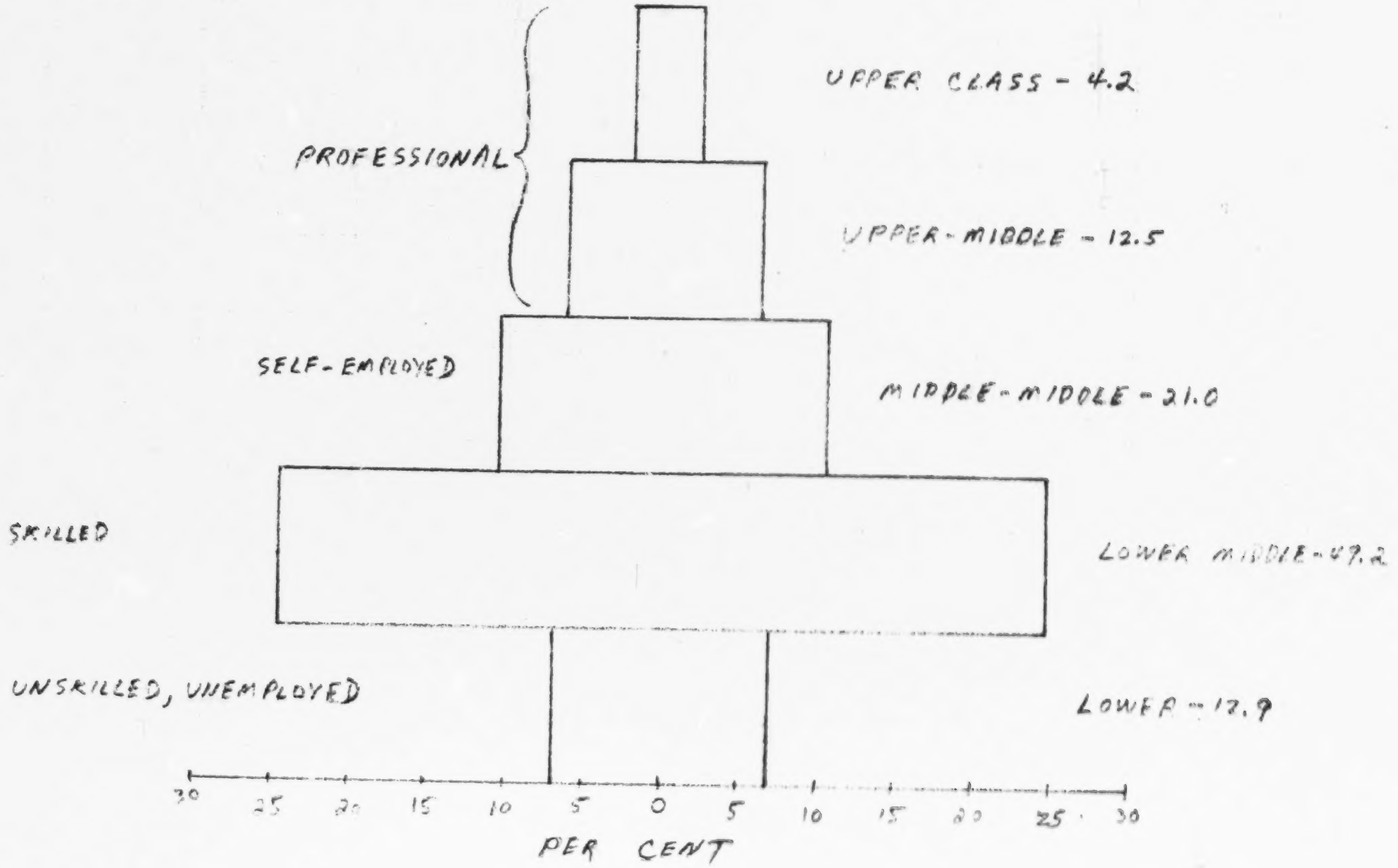
ED

SOCIAL STRATIFICATION

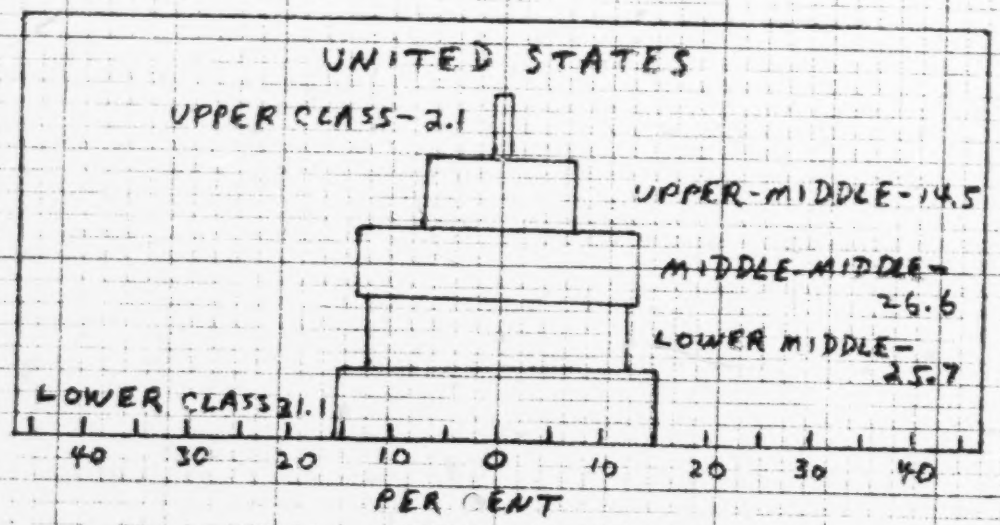
The WN-REC Student Information System contains questions concerning the father's occupation (a 5 point scale). By converting the proportion of students with fathers in various occupations to a Social Status Structure (Fig. 1) we find an interesting social structure for seven rural counties of Western Nevada. The preponderant group is that of skilled labor (lower middle class). The upper class representation was arrived at by arbitrarily selecting ¼ of the Professional group and placing them in that class.

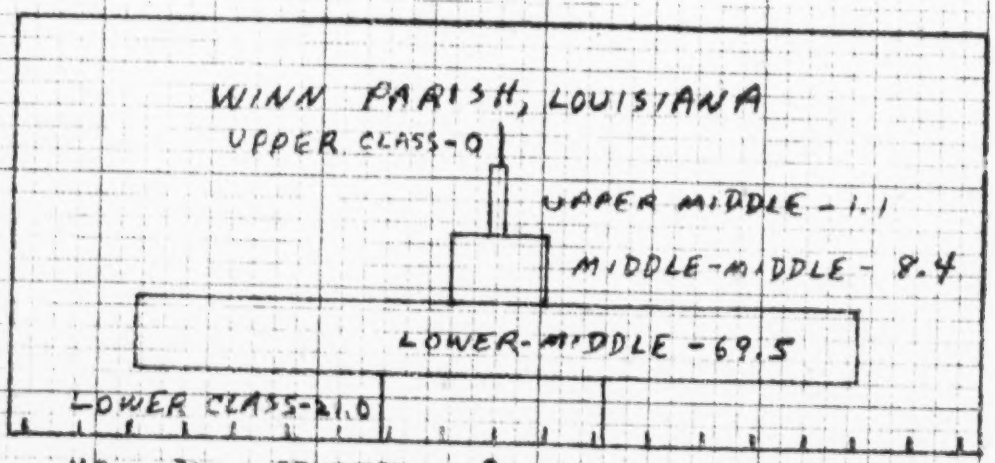
If we compare this social structure with other county social structures in the United States we find that this composite of seven counties most nearly resembles the stratification observed in Winn Parish, Louisiana, but not a mid-western county or the United States as a whole (Fig. 2).

FIG. 1. 7 COUNTIES – WESTERN NEVADA
SOCIAL STRUCTURE



603





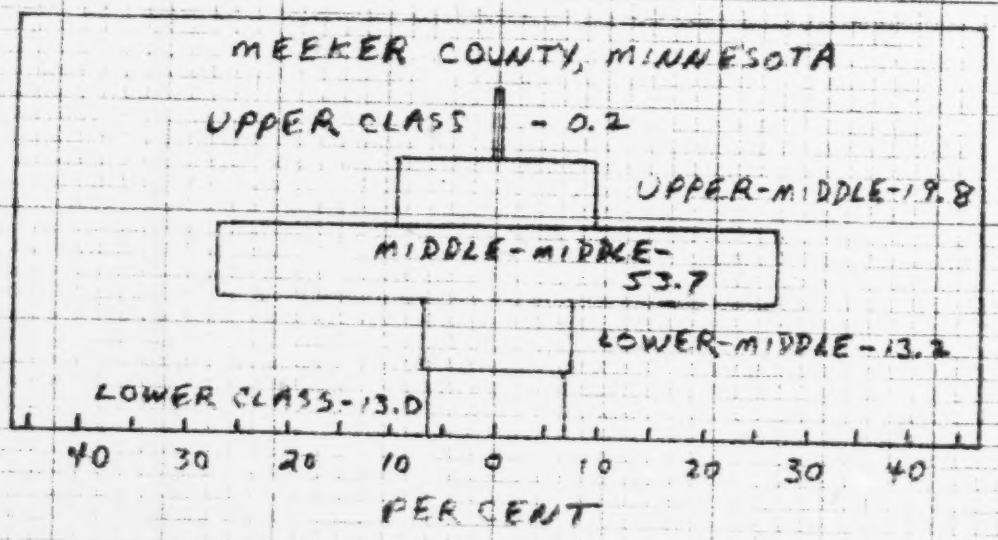


Fig 2. — STRATIFICATION OF FARM POPULATIONS (From Principles of Inductive Rural Sociology by T. L. SMITH + P. E. ZOPF, (Phila: F. A. Davis, 1970).

TIME TO SCHOOL

An analysis of student performance as a function of time to school was made using all ninth grade students in the eight-county Western Nevada Region. The resultant trends for each county were reported in a series of reports on Overage Students and Students in the Lowest Quartile[1]. Graphs of the performance of students in Mathematics (Arithmetic Computation) and in English (Paragraph Meaning) as a function of distance from school were prepared (Figs. 3, 4). These graphs were normalized either by taking the log of the performance of a group as a multiple of the performance of the group closest to school (Fig. 3) or by taking the logarithm of the student group's performance (Fig. 4).

These curves show no discernible trend for times of up to 30 minutes from school but do show a fall off in performance beyond that time. This time (distance) factor may well reflect isolation from town rather than fatigue due to a long bus or car ride.

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1 T. G. Brough, Overage Students and Students in Lowest Quartile Districts A - G, Separate reports, dated Aug. 4 to Sept. 30, 1971, (Lovelock, Nevada: Western Nevada Regional Education Center).

T. G. Brough, Using Student Entry Data and Standardized Test Data (Lovelock, WN-REC, July 28, 1970).

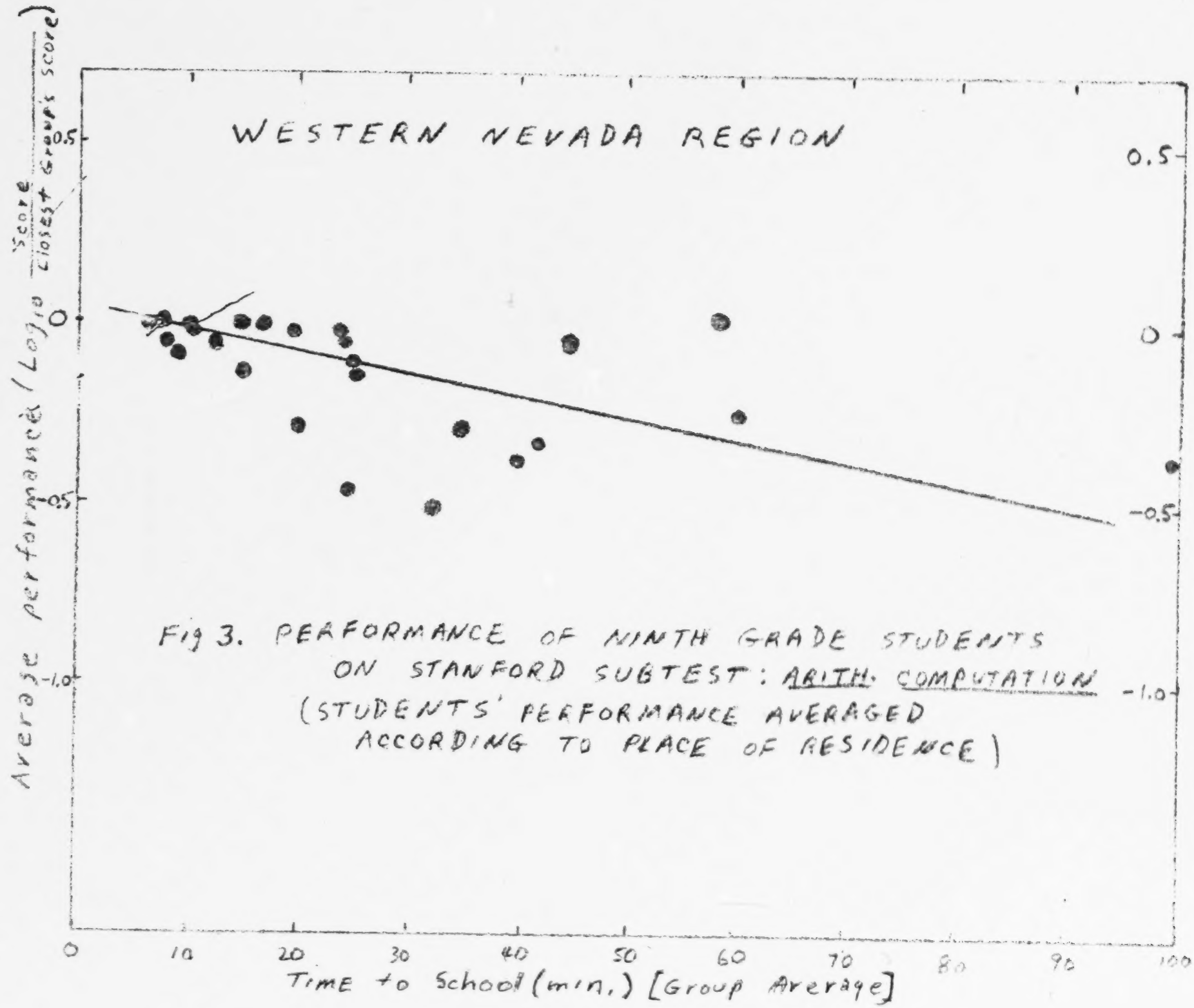


Fig 3. PERFORMANCE OF NINTH GRADE STUDENTS ON STANFORD SUBTEST: ARITH. COMPUTATION (STUDENTS' PERFORMANCE AVERAGED ACCORDING TO PLACE OF RESIDENCE)

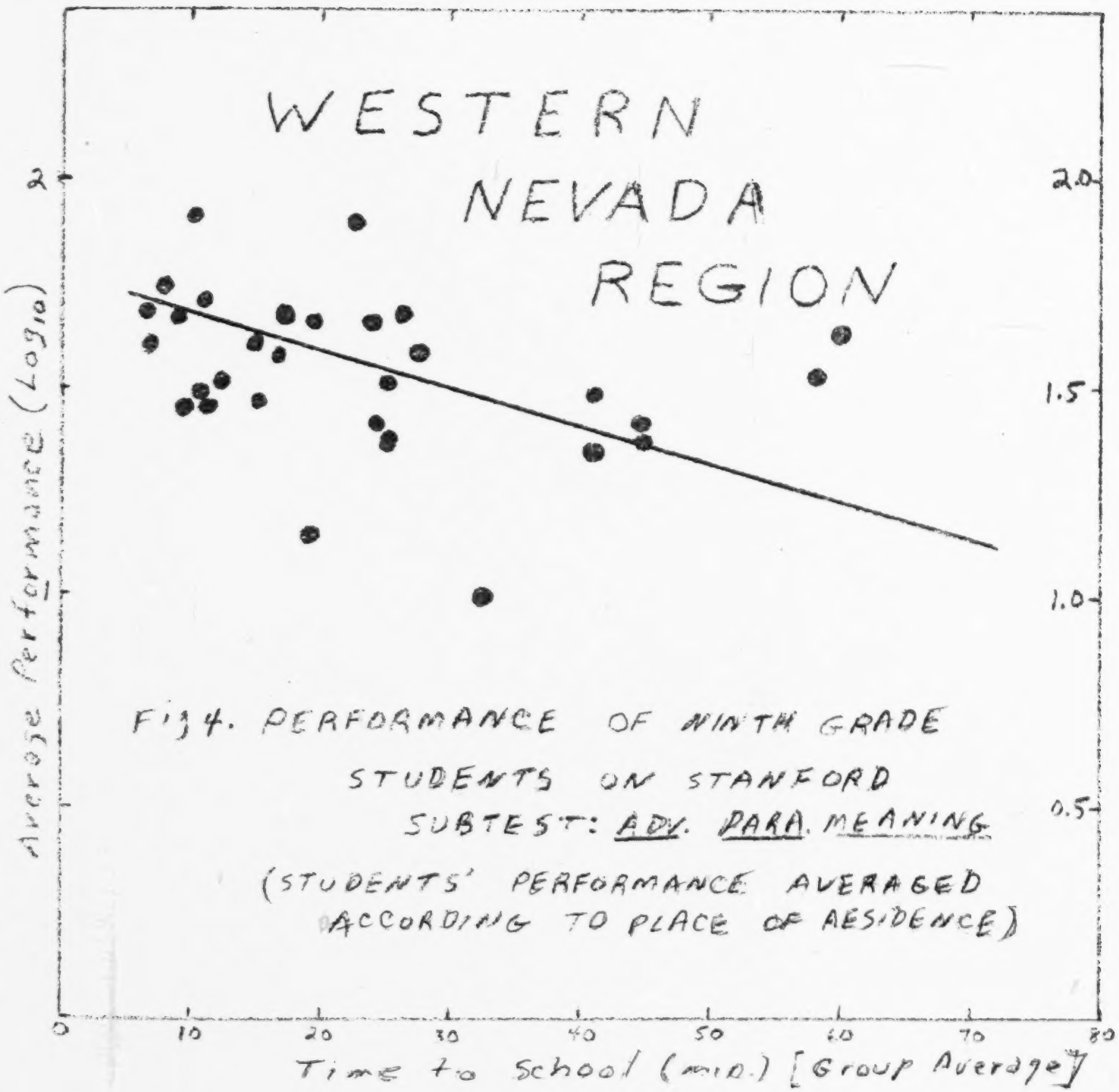


Fig 4. PERFORMANCE OF NINTH GRADE STUDENTS ON STANFORD SUBTEST: ADV. PARA. MEANING

(STUDENTS' PERFORMANCE AVERAGED ACCORDING TO PLACE OF RESIDENCE)

BLUE COLLAR SYNDROME

In analyzing 9th grade student performance in the eight counties of Western Nevada, a preponderance of students from skilled labor families were represented in the Lowest Performance Quartile (Fig. 5). They were severely under-represented in the Upper Quartile. This trend is opposed to that for other students in these rural counties, who were either about equally represented in both the upper and lower quartiles or who actually had a higher proportion in the upper than in the lower quartile (Fig. 6). The fall off in proportion of each group with increasing quartile placement is most severe for the students with skilled labor families, next for unemployed. Students with unskilled or self-employed fathers have the weakest fall-off trend (although the proportion of students with self-employed fathers is greater in both quartiles). Only students with professional fathers have a rising proportion of students with increasing quartile placement.

The proportional representation of students from different occupation groups with rising quartile placement remains somewhat stable for students with unskilled or unemployed fathers, rises slightly for students with professional or self-employed fathers but drops slightly for students with skilled fathers (Fig. 6). This drop off in performance (when a flat curve is expected) may indicate dissatisfaction with school offerings by lower-middle class families - a "blue collar" syndrome characterizing the largest social group in the rural counties.

Fig.5- Achievement of Ninth Grade Students Grouped by Father's Occupation: Proportion of Each group placing at each level

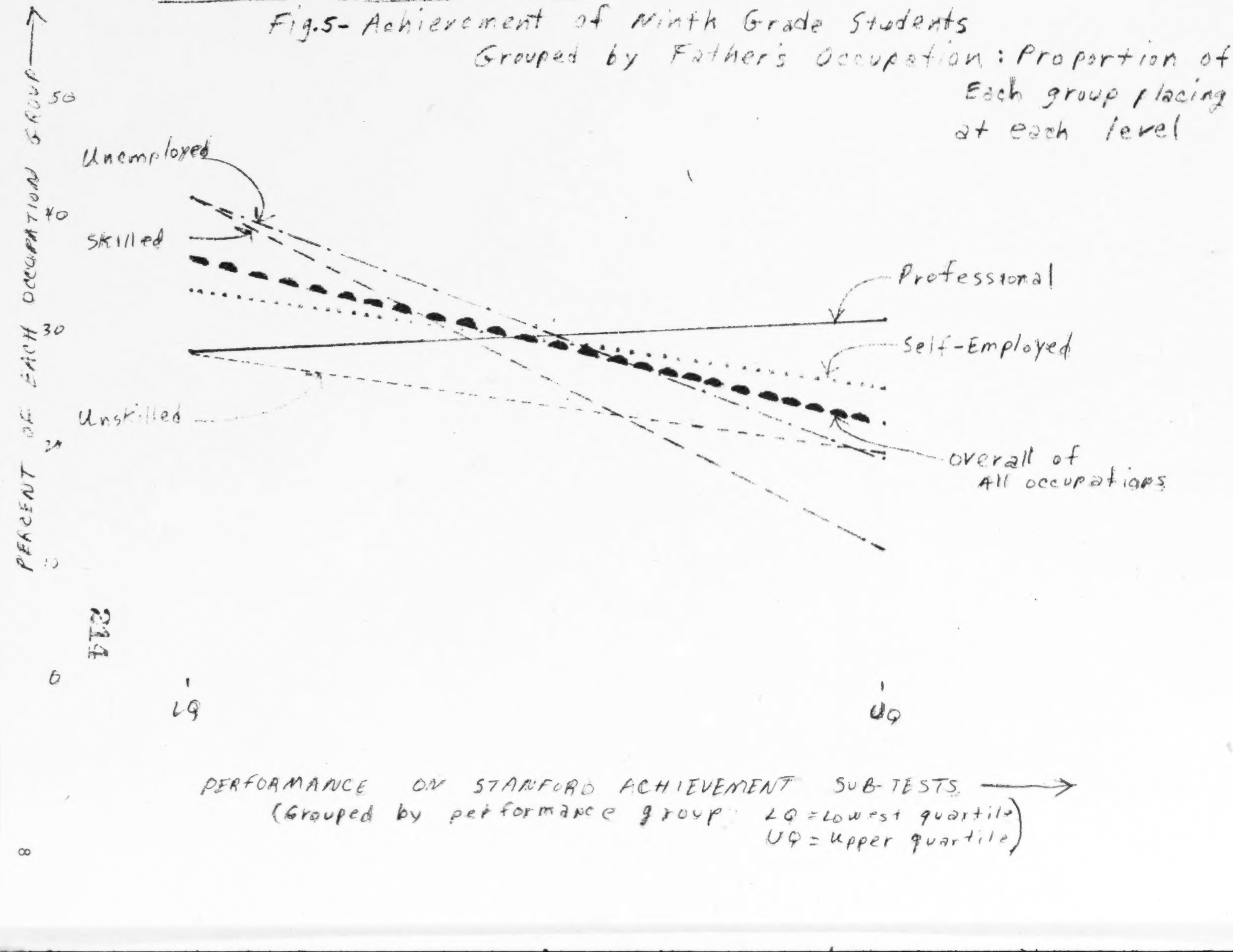
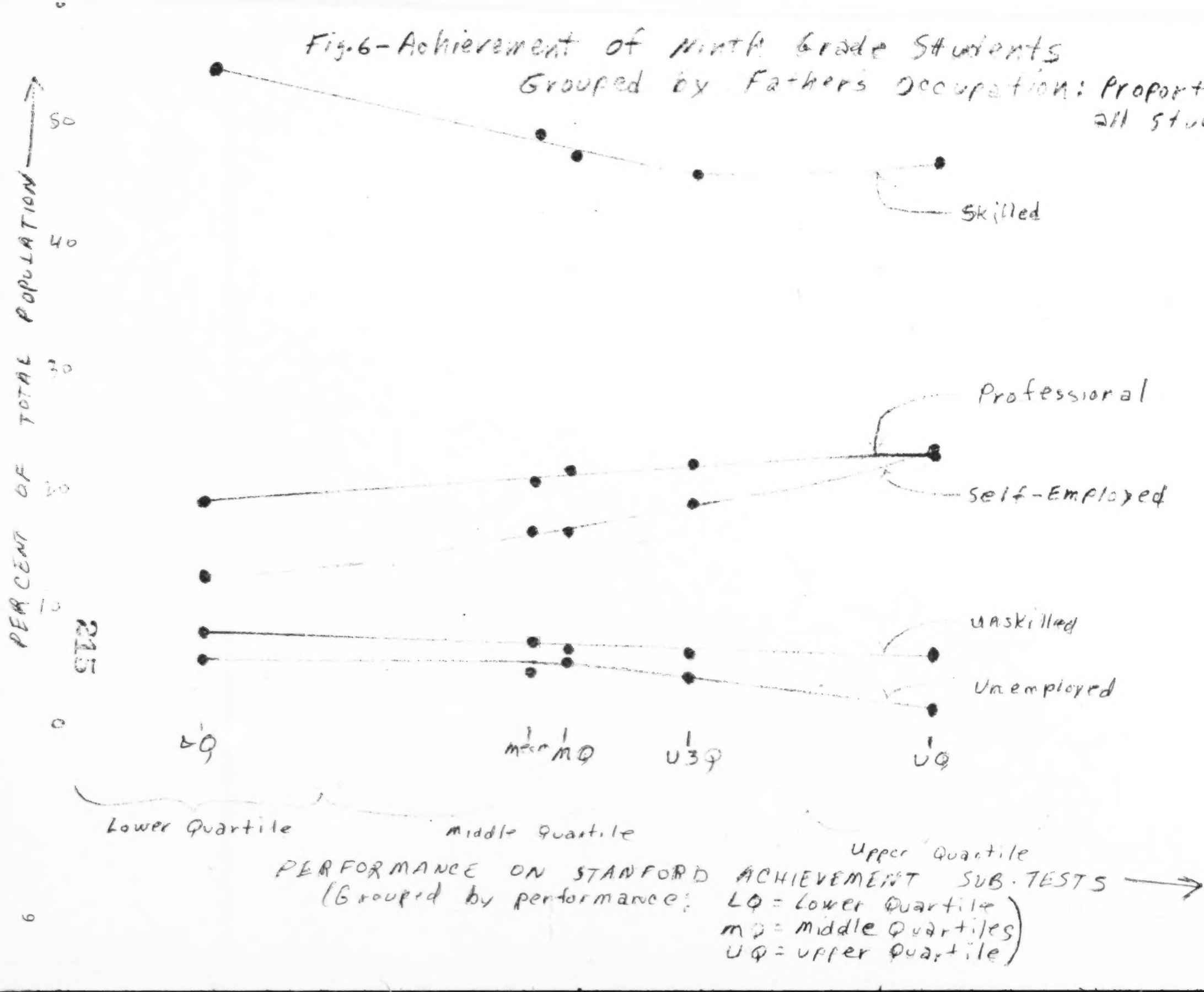


Fig. 6 - Achievement of Ninth Grade Students Grouped by Fathers Occupation: Proportion of all students



STUDENT PERFORMANCE INDICATORS: URBAN AND RURAL STUDENTS IN THE MIDDLE YEARS

June 25, 1971

Theodore G. Brough

WESTERN NEVADA REGIONAL EDUCATION CENTER

220 Main Street
P. O. Box 421
Lovelock, Nevada 89419

Tel. (702) 273-2631

I N T R O D U C T I O N

This report is a preliminary analysis of the urban-rural data gathered by WN-REC in the Spring of 1971. The analysis is being continued and a final report will follow in due course. If the reader does not receive a copy of that final study he may wish to write the author for a copy:

Theodore G. Brough
Pupil Personnel Center
Churchill County School District
590 S. Maine
Fallon, Nevada 89406

The school performance of rural and urban students (as measured by Stanford Achievement Tests) was compared utilizing a random sample of 16 students from each of eight schools in Nevada. Four of the schools were from urban areas (two each from the northern and the southern standard metropolitan districts) and four of the schools were sampled from the rural counties of Western Nevada (one from each county sampled). The resultant sampling of the rural counties yielded two schools from large rural districts (high school enrollment 300 students and above), and two schools from remote rural districts (high school enrollment below 300 students).

The resultant mean performances for each group of students are shown in the following Tables (Tables 1 and 2). Table 1 compares urban with rural students, showing either no significant difference in performance or an advantage for rural students. The only performance area where urban students exceed the rural students is in battery gain score. This is probably due to the urban students lagging in performance at Grade 4 but gaining essential equality by Grade 7.

Table 2 compares the mean performances for students in schools classified as large and small urban and large or remote rural. The small-urban students demonstrate superiority over large-urban students at the fourth grade, but the reverse is true at the seventh grade. There is virtually no difference in performance between large and remote-rural students. The only significant difference indicated (for Paragraph Meaning at the fourth grade level) is at the lowest level of significance ($p < .10$).

Table 1

MEANS OF IQ'S AND PERFORMANCES

ON 4TH AND 7TH GRADE STANFORD ACHIEVEMENT TESTS

Variable	Urban	Rural	Sign.Level	In Favor Of
IQ	107.17	107.89	n.s.	
STANF PA-4*	4.37	4.97	$<.02$	Rural
STANF AR-4**	3.54	4.97	$<.001$	Rural
STANF BATT-4+	4.01	4.98	$<.001$	Rural
STANF PA-7*	7.38	7.71	n.s.	
STANF AR-7**	6.66	7.25	$<.10$	Rural
STANF BATT-7+	7.31	7.56	n.s.	
STANF BATT GAIN+	3.30	2.62	$<.001$	Urban

* PA-4, PA-7 = Paragraph Meaning

** AR-4, AR-7 = Arithmetic or Arthmetic Computation

+ BATT = Mean of medians of each student's sub-scores

Table 2

MEANS OF IQ'S AND PERFORMANCES

ON 4TH AND 7TH STANFORD ACHIEVEMENT TESTS

	Means				Sign. Level		In Favor Of	
Variable	Large Urban	Small Urban	Large Rural	Remote Rural	Large vs. Small Urban	Rural vs. Remote Rural	Urban	Rural
IQ	113.03	101.31	107.68	108.09	<.05	n.s.	Large	
STANF PA-4*	4.89	3.84	5.30	4.63	n.s.	<.10		Large
STANF AR-4**	3.12	3.96	5.15	4.79	<.001	n.s.	Small	
STANF BATT-4+	3.89	4.13	5.22	4.74	<.001	n.s.	Small	
STANF PA-7*	8.06	6.69	8.10	7.32	n.s.	n.s.	Large	
STANF AR-7**	7.45	5.87	7.57	6.93	n.s.	n.s.	Large	
STANF BATT-7+	7.89	6.72	7.63	7.50	n.s.	n.s.	Large	
STANF BATT-GAIN+	4.00	2.59	2.48	2.77	<.001	n.s.	Large	

* PA-4, PA-7 = Paragraph Meaning

** AR-4, AR-7 = Arithmetic or Arithmetic Computation

+ BATT = Mean of medians of each student's sub-scores

A plot of student performances at the fourth grade level and at the seventh grade level (Fig. 1) for these four groups of schools reveals some interesting patterns. The students in the remote-rural schools score higher in Arithmetic at the fourth grade level than in Paragraph Meaning, (as do the students in the small urban schools), while the remote-rural students score higher in Paragraph Meaning than in Arithmetic Computation (as do the small-urban students). For both the large-rural and large-urban students performance in Arithmetic exceeds performance in Paragraph Meaning at both the fourth and seventh grade levels.

Fig. 2 is a plot of the grades achieved (normalized to a standard of 3.2 for all grades received by all students in each school). This plot indicates a drop in average grades achieved in Arithmetic at the fifth grade level for both remote-rural and small-urban students, while the average grade achieved in Paragraph Meaning (English or Literature) remains relatively constant. For both large-rural and large-urban students the plots indicate either a much smaller drop or none at all at the fifth grade.

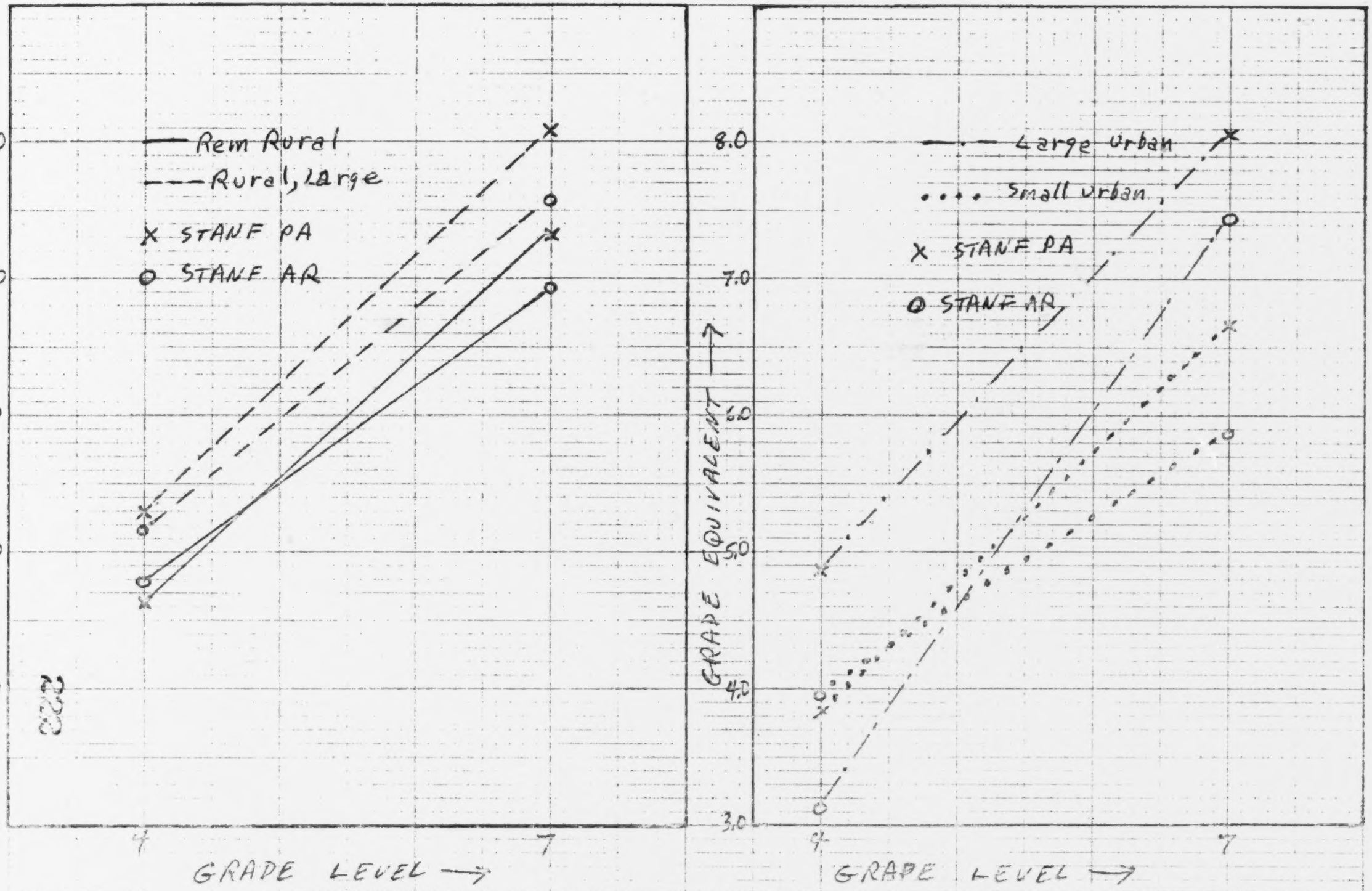


Fig 1. STUDENT PERFORMANCE AT 4TH AND 7TH GRADE — Rem Rural, Large Rural, Large Urban, Small Urban.

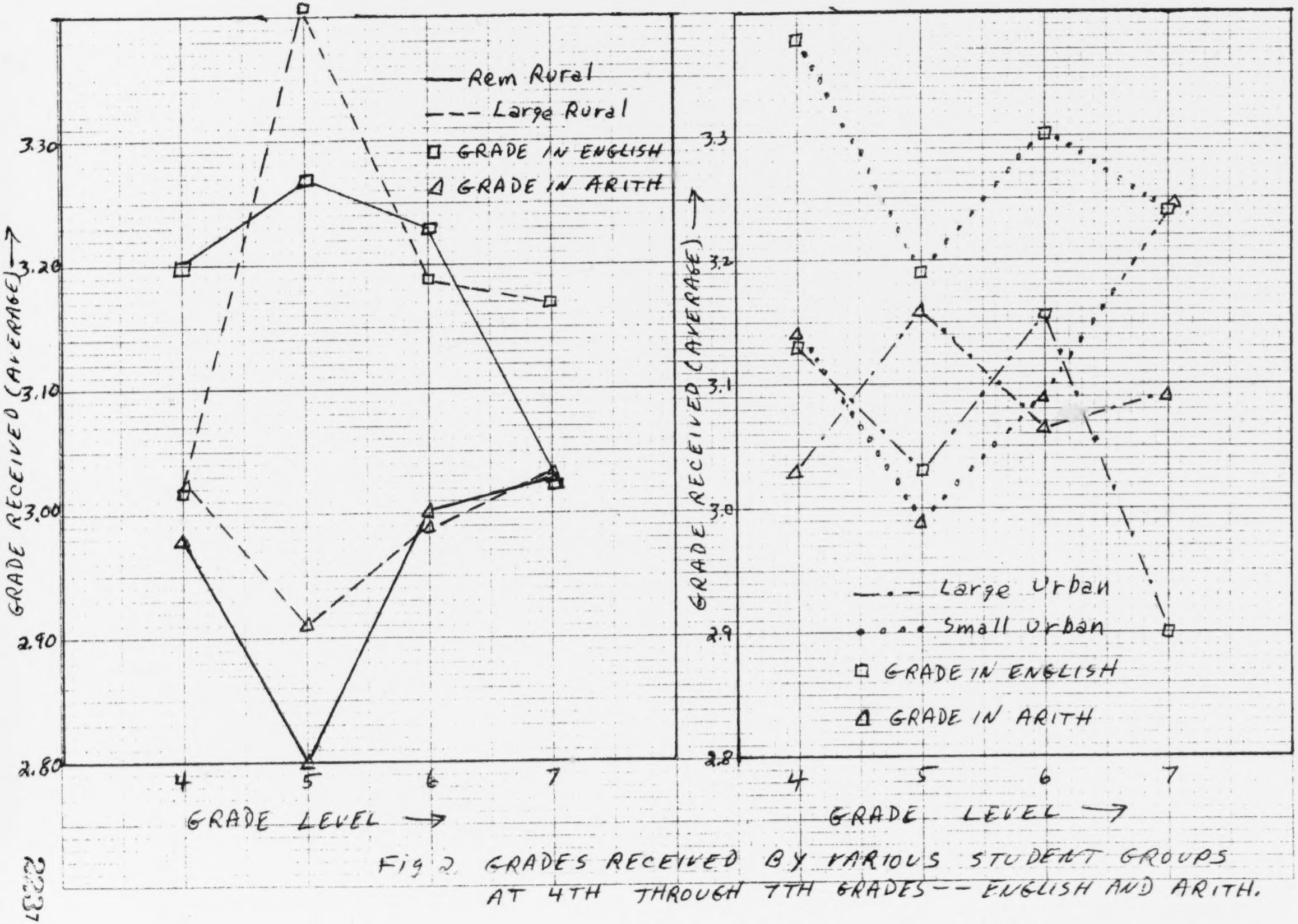


Fig 2 GRADES RECEIVED BY VARIOUS STUDENT GROUPS AT 4TH THROUGH 7TH GRADES -- ENGLISH AND ARITH.

These two Figures seem to point to some similarities among students of the remote-rural and small-urban communities.

A factor analysis of student performance (Battery Scores at seventh grade) along with certain family background and school variables was made. Many of these measures have been binary coded since they are non-scalable (Ethnic, for example). These variables are correlated with the performance measure (Stanford Battery-7) as indicated in Table 3. The factors significantly correlated with the performance measure are ethnicity and father's occupation, the latter being the most important. Table 3 also shows the factor loadings on the two orthogonal (mutually independent) factors resulting from the analysis. Factor 1 is highly loaded on father's relationship, father's occupation and missing parent (family characteristics). Factor 2 is highly loaded on ethnicity, language, father's occupation and the performance measure (ethnic characteristics). It is interesting to note that father's occupation is about equally loaded on each factor, while the loading for the performance measure (Stanford Battery-4) is about four times as important to Factor 2 as to Factor 1. Very little of the performance measure is accounted for by either factor but school performance is more closely related to the Factor 2 variables than to the Factor 1 variables.

Factor Scores were computed for each student utilizing the factor loadings for Factor 2. The resultant scores were utilized as substitutes for the real performance measure (Stanford Battery-7) in an analysis

Table 3

CORRELATIONS AND FACTOR LOADINGS - BACKGROUND VARIABLES AND STANFORD BATT-7

Variable	Correlation With Stanf Batt-7	Factor Loadings Factor-1	Factor-2
Ethnic-1	-.186*	-.043	.432
Ethnic-2	-.193*	-.025	.004
Ethnic-3	-.117	-.038	.429
Language-1	-.111	-.005	.056
Language-2	-.101	-.010	.121
Father's Rel.-1	-.068	.448	.021
Father's Rel.-2	-.001	.005	.001
Father's Occup.	.281**	.065	-.050
Missing Parent	.094	-.500	-.017
Trans. Method	.084	-.003	-.018
Lunch-1	-.038	-.006	.015
Lunch-2	.068	.008	-.037
Time to School	-.053	-.007	.002
Retention Rate	-.135	-.018	.017
Stanf Batt-7	1.000	.009	-.041
Age	-.075	-.020	.018

* Sign at $p < .05$

** Sign at $p < .01$

of variance for 128 students. The independent variables in the analysis were:

A - Large-Urban, Small-Urban, Large-Rural, Remote-Rural

G - Schools

B - IQ

C - Sex

The results of the analysis indicate that the only effect of significance is IQ (high or low), all other factors are non-significant. This analysis was compared to another analysis of variance utilizing each student's Stanf Batt-7 Score as the performance measure. The results were the same: only high or low IQ was a significant variable. The factor score can therefore be called equivalent (in this case) to the Stanf Batt-7 achievement score.

Factor scores have an advantage in that they may be conveniently altered item by item to search for sensitive variables. In this case, if one changes each factor score by subtracting the contribution due to Father's Occupation (highest correlation with performance), then the new factor score is a measure of performance independent of the effect of Father's Occupation. By performing an analysis of variance with the same variables described above, the effect of removing the contribution due to Father's Occupation can perhaps be detected.

Table 3 shows the results of the two analyses of variance mentioned. The effect of removing the contribution of Father's Occupation is to lower the F-ratio for the Urban-Rural factor and raise it for both the

Table 3

CHANGES IN ANOVA F-RATIO AND SIGNIFICANCE LEVEL

UPON REMOVING FATHER'S OCCUPATION CONTRIBUTION FROM FACTOR SCORE

	F Ratio		Sign. Level	
Source of Variation	With Fath. Occ.	Without Fath. Occ.	With Fath. Occ.	Without Fath. Occ.
Urban-Rural	3.04	2.96	$<.20$	$<.20$
IQ	17.8	23.8	$<.025$	$<.01$
Sex	4.09	4.31	$<.20$	$<.10$

IQ and the Sex factor. That is, the effect of Father's Occupation on student performance is to enhance the Urban-Rural differences and to diminish both the IQ and Sex differences.

Other effects of the variables measured can be examined by suitable factor or regression analyses. These are being pursued.